Endocrinology & Iridology

John Andrews

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Endocrinology & Iridology
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for Talia

Foreword

It is with great pleasure that I present this Foreword for John's new text.

This book should be read by all those interested in the subject of Endocrinology whatever their profession. It is written with great clarity and thought. Each chapter unfolds as a tutorial - I can almost imagine the author sitting next to me describing the various signs and symptoms as told by each condition! This reflects John's extensive and ever growing knowledge. It is not merely a textbook but a personalized explanation of disease processes approached from his study of Iridology. Read it in its entirety or dip into a chapter of interest. The system is complex and interactive. Each chapter can stand-alone or be cross reference with others if necessary.

As a patient, I thank John for all his good work, as a general practitioner; I thank him for enlightening me.

Dr Naila Loqueman

May 2005

An Introduction to Endocrinology and Iridology

The understanding of the endocrine system and its many dynamics is required with whatever field we find ourselves working within, after all hormonal exchanges are the basis for life. An in-depth study of the endocrine system is a logical extension from my previous published works on the immune system, embryology and emotional approaches in iridology. It is the next piece of the jigsaw puzzle in iridology research. I doubt, however, despite swathes of research and work in this field, that this is the final piece we need to complete the picture.

Before you begin reading I must make you aware that this is not intended as an in-depth reference on endocrinology alone, but only my awareness of endocrinology, in relation to iridology. With this in mind, much of what does not appear could be just what you are searching for! My apologies. I must stress that the work presented here is based wholly on my experience, and, from direct contact with colleagues, referenced when appropriate. The clinical and research-based work presented in this book is true to my knowledge base at the time of publication, although there is, always, much we can all learn and apply to help patients and their families. I encourage suggestions and discussion within this field.

We need to have a holistic understanding of the endocrine system in order to maintain health. We know that the endocrine system is integral to emotional well-being, healthy growth, metabolism, blood sugar balance, energy and psychoneuroimmunology. Indeed, Peter Mandel, one of natural medicine's pioneering integrators and innovators, states that the root for all diseases is in the endocrine system. The late Bernard Jensen, inspiration to literally millions, said that our health is dependent on the health of our hormonal system.

The activity of the endocrine system complements that of the immune and nervous systems. In fact many authorities conclude that the endocrine system is the most important factor in the maintenance of homeostasis, due to the control of metabolism, growth and reproduction. This activity takes place in a slow, but sure way due to prolonged communication between large numbers of cells at numerous different sites in the body.

Most of the broad approaches to the understanding of the endocrine system are included here. My aim has been to present the material so it is accessible, digestible and practical for a broad base of professions – naturopaths, general practitioners, endocrinologists, patients and, of course, iridologists. If I have only partially achieved this attainment then I will be very happy.

In addition to these broad approaches and application of the hormonal system, in relation to iridology, I have offered some chap-

ters on more specialised topics, some have scant information on them generally, especially in non-specialist circles and iridology generally. I have been inspired to research and integrate diverse sources of information, from a solid foundation of practical experience. Many of these areas have not been mentioned in iridology texts previously; therefore we are open to critical assessments and also errors. The chapters on *The Amazing Role of Prolactin*, *Gastrointestinal Endocrinology in Iridology*, *The Endocrine Role of the Liver* and *The IPB and the Endocrine System* typify this.

With new research we always run the risk of sceptical mindsets, but this should not destabilise our intentions to share the work and provoke debate. I always encourage iridologists to publish and share their work in the Advanced Iridology Research Journal and other forums. Many do, but fear of criticism prevents most from doing so. We must breakthrough this to allow iridology to flourish further.

You may find some of the information presented here as new and even challenging, one attendee on an advanced seminar I was teaching, commented that their training in iridology had been turned on its head. This book does not exclude any other approach in iridology, my hope, is that it adds to it, and even enhances it.

Some of the work featured here has been presented at endocrinology meetings or conferences in the UK, plus also at iridology congress and symposia in Greece, USA, Italy, South Africa, England and as I write, in Sao Paulo in Brasil over four days at the end of November 2004. A full advanced course is scheduled on Endocrinology & Iridology in Ireland for April 2005. Further such seminars on the subject are in the pipeline in the UK, USA and throughout the world. If any of this material has intrigued or inspired, and you wish to learn more please get in touch via email to be added to our international database.

If one fraction of the material here has inspired or even helped you as an iridology student or a practitioner to assist and help a patient or given you a different perspective or understanding, then in my eyes, all this work has been worthwhile and the project is a complete success.

I offer heartfelt appreciation for your interest. Thanks for reading.

John Andrews

Sao Paulo
Brazil

November 2004

Mechanisms of Hormones

Depending on where hormones exert their biological effect elicited in relation to the location of hormonal release, we have five accepted classifications of hormonal types:

- Endocrine
- Paracrine
- Autocrine
- Intracrine
- Neuroendocrine

Paracrine hormones are released from one cell and exert a biological effect on a neighbouring cell in the same organ or tissue, for example in the liver.

The effect is considered autocrine when a hormone produces a biological influence on the same cell that released it.

When a hormone is synthesized and acts in an intracellular manner in the same cell, it is termed as intracrine, for example with some types of androgen-derived oestrogen.

The effect is considered endocrine, when a hormone is released into the circulation and travels through the blood or nervous system to produce a biological effect by binding to hormonal receptors on distant target cells.

Neuroendocrine cell signalling has neurosecretory cells that have distant target cells through the nervous system.

Neuroendocrine Role of the Hypothalamus

The hypothalamus is a tiny neural gland, weighing a mere 1/300 of the total brain mass, that's 4g or less than 1/2%. Despite its size it exerts enormous influence over the mind and body and even minor dysfunctions in a single nucleus can create considerable mental, emotional and physical problems. In Electroacupuncture (according to Voll) the hypothalamus is considered to be one of the most important measurement points for general health (the Hypothalamic point on the ear).

In Endocrinology the hypothalamus rarely figures clinically, unless in cases of Craniopharyngioma, for example. It all seems dependent on the approach of the individual specialist. If tumours are not part of the clinical focus, then the hypothalamus in endocrinology can be overlooked. This possibility rings true in natural medicine also. The hypothalamus' central influence across psychoneuroendocrinoimmunology is often neglected and is only covered with brevity during basic training. This needs to be amended in both approaches of medicine, as the hypothalamus is the endocrine region of the brain that coordinates the physiological responses from different organs and glands, which help to maintain homeostasis for the organism we know as the human body.

Function

The Hypothalamus is central to the self-regulation systems of our organism, such as:

- Body temperature
- Hunger and appetite
- Certain pain responses
- Water balance
- Thirst
- Sexual activity and drive
- Sleeping and waking mechanisms
- Emotional behaviour - fear, rage, sadness, pleasure
- Perspiration
- Blood sugar balance
- Ambition
- Endocrine gland functions, especially pituitary functions
- Fat metabolism
- Immune system reactions
- Activity of the visceral or autonomic nervous system (ANS)
- Peristalsis

Anatomy

The Hypothalamus is a major integrating connection between the nervous, immune and endocrine systems. Located in the forebrain, immediately above the Pituitary gland and lying beneath the thalami (or thalamus); the hypothalamus is made up of the floor of the third ventricle which is comprised of the tuber cinereum and the median eminence, plus several groups of neurones

termed ‘nuclei’, each with different functions (although the exact nature of these varied functions is yet to be clarified).

A continuation of the tuber cinereum and the median eminence forms the infundibulum (commonly known as the ‘pituitary stalk’) - which joins the hypothalamus with the pituitary gland; thus the pathways for endocrine influence are set.

According to *Human Endocrinology by Paul Gard*, “It is at the level of the Hypothalamus that the higher centres of the brain are able to influence the activity of the endocrine system.”

Diencephalon

The Hypothalamus is part of the diencephalon that literally means “inbetween brain”.

The Hypothalamus is the bridge between the brain and body, physical and emotional. It is rich in hormones, regulates the function of the Hypophysis and has a complex relationship with the neurological functions, especially the Limbic system, which is involved in regulating emotions and basic cerebral reactions; and consists of the amygdala (where fear is registered, recognised and generated), Hippocampus (which is involved in the creation of anxiety, self-awareness, hedonism, fear conditioning and storage of long term memory), caudate nucleus, Pineal gland - which is involved in the production of the melatonin hormone from tryptophan, our circadian rhythm, influences sexual function, immune responses to stress and emotions, is central to the body’s internal magnetic system, prevents spinal problems such as scoliosis from developing, balances sleep patterns and a person’s mood, in relation to the response to light (for example SAD) and serotonin, Thalami (incorrectly referred to as “thalamus”; due to its paired existence.)

The thalami are located one on each side of the third ventricle in the diencephalon. All sensations, except smell, pass through the thalami on their way to other areas of the brain. The thalami are considered to be the “gateway to consciousness” on numerous different levels. It has corresponding fibre systems which are connected to parts of the CNS, cerebral cortex, cerebellum and spinal cord; and is also considered a “coordination organ” involved in connecting feelings of pain, touch, temperature with taste, balance and the sensations of the bodily organs. Within this synthesis emphatic emotional reactions are produced, such as likes and dislikes, love and hate.

Neuroendocrine Hypothalamic Influences

With the Hypothalamus connected to so many different functions, it is unsurprising to find that numerous factors can influence hypothalamic performance, such as:

- Bacteria (especially streptococcus), virus and general systemic toxaemia
- Stimulants such as nicotine, coffee, alcohol and drugs such as sedatives and barbiturates
- Insecticides used in agriculture
- Problems with the wisdom teeth
- Scurvy

Hormones of the Hypothalamus and Adenohypophysis

Hypothalamus	Adenohypophysis	Target Gland or Tissue
GNRH	GH	many glands and all tissues
GNRIH	GH inhibition	Thyroid gland Islets of Langerhans (pancreas) All tissues
TRH	TSH	Thyroid gland
CRH	ACTH	Adrenal cortex
None	PRL	Breast
PIF	PRL inhibition	Breast
LNRH or GnRH	FSH or LH	ovaries and testes

GHRH	=	growth hormone releasing hormone
GH	=	growth hormone (somatotrophin)
GHRIH	=	growth hormone release inhibiting hormone (somatostatin)
TRH	=	thyroid releasing hormone
TSH	=	thyroid stimulating hormone
CRH	=	corticotrophin releasing hormone
ACTH	=	adrenocorticotrophic hormone
PRL	=	prolactin (lactogenic hormone)
PIF	=	prolactin inhibiting factor
LNRH	=	luetinising hormone releasing hormone
GnRH	=	gonadotrophin releasing hormone
LH	=	luteinising hormone

- Cerebrosclerosis, multiple sclerosis and lateral sclerosis
- EMFs, geopathic stress, x-rays and other forms of excess radiation
- Heavy metal toxicity such as mercury, lead, aluminium and cadmium
- Neuromuscular spastic conditions affecting the optic and auditory centres
- Low zinc, germanium, chromium, selenium or copper levels
- Depression
- Dysbiosis
- General endocrine disturbances (e.g. hypophyseal adenoma)
- Dysglycaemia
- Emotional stress (e.g. grief and the experience of bereavement)

Hypothalamic Regulation of Hormonal Release

Although the hypothalamus is considered an endocrine gland it does not have to function detached and distant from the central nervous system because it is constantly receiving, processing and integrating afferent signals from multiple neurological locations. Some of these afferent signals convey sensory environmental information and some signals are visceral afferents that provide the CNS with information from organs such as the heart, intestines, liver and the stomach. The hypothalamus is the centre for integration. As iridologists we need to integrate our practice with the importance of the hypothalamus, because its neuroendocrinological documentation helps to prove Iridology.

Circulating hormones produced by endocrine glands and also substrates such as glucose can help to regulate hypothalamic neuronal functions. Other neuronal signals are transmitted by an eclectic collection of neurotransmitters from afferent fibres such as adrenaline, noradrenaline, histamine, dopamine, serotonin, glutamate and acetylcholine. All these factors influence the hypothalamic hormonal release, as can the hypothalamic neuropeptides that possess an ultra short feedback loop. From this perspective we can say the hypothalamus carries the potential for self-determination.

Hypothalamic hormonal release is monitored by the following regulations:

- Environmental
- Endocrine
- Neural

Hormones can either signal the hypothalamus to inhibit or stimulate hypophysiotropic hormone release from the pituitary. This loop of hormonal regulation and control is paramount to prevent the onset of numerous diseases that can take over the hormonal, immune or nervous systems. An example of this is the ability of ACTH to inhibit CRH release by the hypothalamus or the production of cortisol that inhibits CRH also.

Two main types of neurons and the endocrine hypothalamus

Two general types of neurons have been identified as components of the endocrine hypothalamus. These include the parvicellular neurons, which have axons terminating in the median eminence and the magnocellular neurons. The magnocellular neuron axons terminate in the posterior pituitary gland.

Neuropeptides released from the parvicellular neurons control the anterior pituitary functions. These include CRH, growth hormone-releasing hormone, dopamine, luteinising hormone-releasing hormone and somatostatin, thyrotropin-releasing hormone. These hypothalamic peptides stimulate the release of more well-known and recognised hormones from the anterior pituitary such as prolactin, growth hormone, ACTH, luteinising hormone (LH), follicle-stimulating hormone (FSH) and thyroid-stimulating hormone (TSH).

They reach the general systemic circulation, together with the posterior pituitary hormones such as oxytocin and ADH, through the venous blood draining the pituitary which enters the intercavernous sinus and the internal jugular veins.

Neuroendocrine Immunology & the Hypothalamus

The immune system response can be increased or decreased by triggers from the hypothalamus.

- The hypothalamus has connections and influence over/to our emotions, endocrine functions, immunity and afferent autonomic nervous system. The principle structures of the immune system, thymus, spleen and lymph nodes are innovated by the autonomic nervous system.

- The immune system directly influences activity of a critical neuroendocrine circuit involving the hypothalamus, pituitary and adrenal glands. The influence derives from thymic peptides originating from the thymus gland.

- The hypothalamus operates through various ‘feedback’ mechanisms. A long loop feedback connection exists between the brain (and hypothalamus) and primary and secondary tissues of immunity. The brain and psyche can and do influence immune efficacy. It is also interesting to note that thymic hormones (thymosin) are also feedback controlled.

- There is an afferent link between a peripheral site of humorally (B-cell) mediated acute inflammatory response and specific nuclei within the hypothalamus.

- A peripheral inflammatory response will increase the turnover rate of the neurotransmitter *noradrenaline* in the hypothalamus.

- Immunological signs are not only transmitted to the adrenal glands and brain (hypothalamus and epiphysis) from distant tissue foci; but those signs are also capable of eliciting CNS activity.

- Nerve cells fire in the hypothalamus after vaccination - which can lead to adverse effects on the nervous systems, endocrine, neurological and immunological systems.

- Neurohormones can elicit immune changes.

- The hypothalamus is rich in hormones, regulates the pituitary and has a complex relationship with the limbic system (so-called ‘emotional brain’). The hypothalamus has receptor sites for humoral influences from the blood, cerebrospinal fluid and influences the pituitary through a variety of polypeptide releasing factors (TRH, LHRH, CRF and somatostatin).

- In addition to this there is an established link between the pituitary and thymus gland on which the T-cells are dependent.

- Nuclei in the dorsal hypothalamus are involved in the suppression of primary antibody responses; prolonged antigen in the blood and inability to influence streptococcal antigen response.

- In the lateral hypothalamus serotonin reduces excess activity. Serotonin is an important neurotransmitter found and produced in the intestines (enteric nervous system and platelets) and the brain.

- Serotonin is derived from the amino acid - tryptophan - that synthesises 5-hydroxytryptamine into serotonin. Tryptophan is found in Spirulina, walnuts, avocado, pineapple, and Chlorella, amongst other food sources. Serotonin, found in the hypothalamus, plays a part in the regulation of antibody (immunoglobulin etc) production.

- Insulin is not simply a hormone secreted by the Islets of Langerhans in the pancreas, but is also classified as a neuropeptide - manufactured and stored in parts of the brain; particularly the amygdala and hypothalamus. It is clear that the limbic system (of which the aforementioned are members, as previously noted), which is the seat of the emotional brain; is also the focal point for receptors for neuropeptides. There are also insulin receptors in the brain; which have been mapped from the neurological tracking of insulin.

- Body temperature is registered in specialised neurons in the hypothalamus that respond to the temperature of incoming blood, as it circulates throughout the brain. If the blood is too cool; then heat production is stimulated. The hypothalamus raises or lowers the blood/body temperature. It will induce a fever in response to infection. To help the immune system "burn up" the problem, when infected, the body releases pyrogenic chemicals into the bloodstream, acting on temperature sensing neurones in the hypothalamus. Fever is, essentially, an immune response.

- Hypothalamic dysfunction stems from a disturbance of the neurotransmitters, which carry messages to, and from it, in connection with other parts of the brain, intestinal tissues (MALT), endocrine glands, nerve cells and the blood. The lateral nucleus of the hypothalamus registers a fall in blood sugar levels; the ventromedial aspect responds to achieve a balance by raising blood glucose levels. Chronic changes in the blood sugar levels can influence the neurohormonal equilibrium and exchange; which can lead to, for example, 'menstrual headache or migraine', which is a hypothalamic disturbance due to progesterone deficiency. This could also lead to amenorrhoea, particularly if stress is a large factor in the presenting case.

- Other conditions linked to hypothalamic dysfunction from research in recent years include diabetes mellitus, sub-fertility, clinical obesity, bulimia, Anorexia nervosa and Multiple Sclerosis (MS). MS is defined through nerve demyelination - a destruction of the myelin sheath; in basic terms the protective coating afforded our nerves. This destruction of the myelin sheath is considered an autoimmune affliction of brain and spinal cord. The posterior hypothalamus registers and is affected by myelin sheath changes.

- The hypothalamus has sexual drive centres; where interaction of neurotransmitter and sexual hormones take place. Oxytocin is made in the hypothalamus and is released as a result of stimulation to the sexual centres and reproductive organs. Oxytocin floods the brain during orgasm and the final stages of childbirth (uterine contractions). Oxytocin promotes the production of breast milk. It is closely linked to endorphins. Endorphins - such as beta endorphins - are endogenous opiates and neuropeptides created in nerve cells which are all rich in both hypothalamus and pituitary and for which there are receptor sites throughout the system; including immune cells and tissues. Neuropeptide levels appear to be altered in autoimmune disease - studies have shown RA patients to have lower levels of beta-endorphins. Beta-endorphins stimulate the proliferation of T-cells. These beta-endorphins help to modulate the central nervous system.

- The pineal has been linked to involvement in immune and circadian rhythm control and immune dysfunction related conditions in recent medical postulations. Anatomically, it is connected to the brain via a short stalk containing nerves, many of which terminate in the hypothalamus.

- Pro-inflammatory cytokines contribute to the development of insulin resistance in obese individuals and the potential role of leptin as a regulator of fat mass.

Leptin

The name leptin is derived from the ancient Greek word *leptos*, which translates as meaning thin. Leptin is a polypeptide hormone, which is secreted by adipose tissue in communication with the hypothalamus. Leptin contains 146 amino acids. The leptin signal is transported across the blood-brain barrier to be received and integrated by the hypothalamic neurons, thus limiting the need to eat more food and it encourages gonadotrophin releasing hormone or GnRH.

Leptin is an indicator of energy stores in addition to its role as a modulator of energy balance.

In recent years more and more research regarding leptin has come to light. It has become a hot topic, because the leptin levels help control our body fat. The levels of leptin correlate with the percentage of adipose tissue. This creates an endocrine indicator of energy stores, but the balance can be tipped due to feedback signals and endocrine pathways. Many people in the field have looked at leptin as a cure for obesity. Obesity is endemic in many western countries now, and, the incidence is growing alarmingly amongst children in the UK and USA. Lower levels of leptin and increased adiposity leads to numerous malfunctions of the endocrine system.

The inhibition of food intake by the influence of leptin has prompted a lot of this interest. As a protein the patient can take Leptin through an oral dose, but leptin is like insulin and is very quickly degraded by the stomach via this route of ingestion. As a drug it must be administered as a subcutaneous injection. In some studies high doses of leptin does trigger some weight loss, but the results are considered unimpressive in general by clinicians.

Leptin resistance caused by blood-brain barrier may prevent remarkable weight loss. It has been suggested that only a fixed amount of leptin can be transported across the barrier, in order that excess leptin in the blood does not increase leptin in the CNS above a fixed level. Disorders in this barrier may account for some cases of clinical obesity.

Inherited leptin deficiency is an incredibly rare recessive disorder that causes gross obesity and infertility. However, because some studies have noted that obese individuals have high plasma leptin concentrations that do not result in an expected reduction in food intake and higher expenditure of energy, it has been suggested that obesity could be linked, not to a deficiency of leptin, but a leptin resistance.

Impaired sleep patterns can disrupt the leptin pathways and integration with the hypothalamus. Weight gain can develop due to chronically disrupted sleep patterns, especially when an individual feels under stress. The hypothalamus helps to regulate our sleep patterns together with the secretion of melatonin from the pineal gland. Chronically impaired sleep leads to immune dysfunction and susceptibility to infection and autoimmunity.

The action of leptin on GnRH release helps to explain how underweight women tend to be in a state of Subfertility. This is a neuroendocrine immunology protective response to prevent pregnancy due to malnourishment.

Leptin is also secreted in high levels before the onset of puberty. Indeed, body weight is a far more accurate method of prediction for the onset of menstruation than actual age.

It is now accepted that, surprisingly, Leptin levels do not rise in response to individual meals.

Ghrelin

Ghrelin is a hormonal mediator implicated in the gastrointestinal regulation of energy intake. It is generally released from the stomach and other areas of the gastrointestinal tract as anticipation before a meal. Ghrelin stimulates the release of growth hormone-releasing hormone from the hypothalamus and thus increases levels of Growth Hormone. This decreases fat oxidation leading to adiposity of body tissues.

It has been noted that Ghrelin has anti-leptin potential and that it triggers an increase in our appetites and may cause us to overeat. Recorded ghrelin levels are typically increased in clinically obese patients. Ghrelin stimulates appetite through the activation of the NPY/AgRP-expressing neurons. In a healthy hypothalamic-intestinal relationship Polypeptide YY is released from the large intestine that inhibits these neurons, causing a decrease in appetite in transient cycles throughout the waking day.

The hypothalamus integrates neural and hormonal signals from the gastrointestinal tract. Hormones such as cholecystokinin or ghrelin are released due to the presence of food in the gut. The *nucleas tractus solitarius* relays taste information to the hypothalamus, plus other signals regarding social setting, ambiance, smell, sight or memory of food may influence energy intake due to the integration of modulatory factors by our hypothalamus.

Iridology & the Neuroendocrine Hypothalamus

The microneural connections with the hypothalamus and the lateral geniculate bodies in the thalami terminate at the iris and Inner Pupillary Border. The lateral geniculate bodies (LGB) are where this information, together with visual and pupillary processing, is considered and enacted.

Topography

Where is the hypothalamus to be located on the iris? Well, we can be presented with multiple locations. These can be classified as the following types of location:

- Classical Topography (External border of the collarette)
- Embryological Topography (Internal border of the collarette)
- Inner Pupillary Border (Neuroendocrine expression)

Neuroendocrine Expression of the IPB

The hypothalamus on the IPB is presented at 358º through 360º to 2º in the frontal section. The Microneural connections with the pituitary, pineal and the rest of the limbic system can also be identified here.

Neuroendocrine signs located here include the following:

- Partial Atrophy
- Localised indentation of the iris margin into the pupil
- Nerve Rag or *neurolappen*
- S Sign
- Localised globular sign
- Pigment dispersion syndrome (PDS)

The S sign can also be located elsewhere along the inner pupillary pigmented epithelium border. It is topolabile for expression of the hypothalamic-pituitary functions.

Revised Hypothalamic Embryological Topography

The embryological topography for the hypothalamus has several localities. It is represented at 180º in the frontal section of the pupillary zone. I have revised its location to be inclusive of the complete pupillary zone here. Also we need to observe at 180º in the ventral sector at the pupillary margin. Refer to Embryology & Iridology for complete discussion on the embryological topography and charts.

Main embryological signs include:

- Defect
- Crypt
- Lacuna (usually Leaf or stairstep)
- Radii solaris (Radial furrow)

Classical Iris Topography for the Endocrine Hypothalamus

I feel the hypothalamus topography from classical iridology requires a revision in regards to this study of the endocrine system. We know from research with over 1200 endocrine patients that the hormonal gland projections in the iris appear attached to the external border of the collarette.

From research the hypothalamus transcends the pituitary gland at 360º on the external border of the collarette. The pituitary can be located at 358º in the right iris and 2º in the left iris.

The chief signs for the hypothalamus include:

- Leaf Lacuna
- Local frontal indentation of the collarette
- Drop to either side of the collarette
- Radii solaris (Radial Furrow) at 360º in either iris

Therapeutic support for the neuroendocrine functions of the hypothalamus

- Colourpuncture
- Hypothalamic Points in orange, blue, green, red, rose, grey or turquoise depending on the condition
- Homotoxicology
- Cranio-Sacral Therapy

Herbal Medicine

- *Withania*
- *Centella*
- *Larrea tridenta*
- *Pfaffia paniculata*
- *Eleutherococcus senticosus*
- *Paeonia lactiflora radix*
- *Coriolus versicolor*
- *Gymnema sylvestre*
- *Ganoderma*

Neuroendocrine Immunology Overview in Iridology

A Selection of Crossovers

Our immune systems and neuroendocrine system, function to maintain a healthy equilibrium or homeostasis. We have points of interest, such as the pineal or hypothalamus, where there are crossovers of activity between the systems. Thus we now know that these systems are interchangeable in their promotion and support of adaptability. This counters the general view that the functions of the immune or endocrine system are independent. In reality they are both extremely reliant on each other. With the new research in iridology we can determine exactly what these crossovers are and potentially how they can influence an individual. The basis for this concept is touched upon in the text on *Immunology & Iridology*. In neuroendocrine iridology we can evaluate the natural rhythms of life and pathogenesis within the iris and Inner Pupillary Border.

The neuroendocrine system regulates the effects of various metabolic, reproductive, osmotic and external stressors on the body. The main function of the immune system is recognised to act in eliminating or controlling foreign agents. Immune balance is essential for our survival. Chronically hyper immune responses can lead to autoimmunity and suppressed immune functions lead to opportunistic infection or even the threat of death. The immune and endocrine systems exist in a finely balanced symbiotic relationship to stave off mesenchymal matrix collapse and oxidative stress.

Modernising Neuroendocrinologists now accept what ancient traditional healing systems from around the globe have stated for millennia, that the combination of both these systems provides survival through, what is termed, *biodirectional communication*. This communication combines homeostatic regulation with immune balance.

Direct Neuronal Innervation of Immune Tissues

Autonomic innervation of lymphoid tissue has been extensively studied in the last 30 years. For example, it has been established that sympathetic, parasympathetic and non-adrenergic non-cholinergic nerves richly supply the bone marrow and thymus gland, where our B and T cells develop. These nerves also irrigate fields of lymphocytes in secondary lymphoid organs, plus mature and activate immune cells present in the upper respiratory and intestinal systems.

Research has found that all autonomic nerves are capable of regulating most cells involved in inflammation. Here we can see the connection between differentiations of the collarette structure within the field of iridology in the context of psychoneuroendocrinoimmunology.

Autonomic innervation of lymphoid tissue carries multiple levels of activity – similar to the iris! Sympathetic nerves can release neuropeptide Y, whilst parasympathetic nerves can release vasoactive intestinal polypeptide (VIP).

Central Nervous System Integrates Immune Modulation

A wide range of immune cells can be stimulated or inhibited by hormones released by the central nervous system and peripheral endocrine glands and diffuse endocrine tissue, such as the large intestine. It has been found that the following are all capable of immune system regulation:

- Prolactin
- Somatostatin
- Growth Hormone
- TRH
- TSH
- Arginine vasopressin
- Gonadotrophin releasing hormone
- Testosterone
- Aldosterone
- Oestrogen
- Vasoactive polypeptide
- Substance P
- Histamine
- Cortisol
- Adrenaline
- Noradrenaline

Classical Endocrine Theories on Stress & Glucocorticoids

The hypothalamus, which synthesizes many of the releasing hormones acting on the pituitary, receives a rich autonomic innervation from the brainstem and is capable of synthesizing catecholamines, such as noradrenaline & adrenaline. Cortisol production can also be triggered here in biofeedback communication with the adrenal cortex.

Leukocytes not only modulate neuroendocrine peptide production by the Central Nervous System (CNS), but they are capable of producing stress-associated peptides and hormones, that were previously thought to reside exclusively in the CNS. These leukocyte-derived peptides and hormones may be produced in response to powerful stimulants such as viruses and could also be produced in response to a macrophage IL-1 release that occurs following a hormonal stimulation of the CNS.

One of the many roles of these stress-induced leukocyte peptides is of paracrine immune regulation in the adrenal cortex.

Gender Differences in Autoimmunity

Autoimmune diseases can now affect up to 7% of the adult human population. This includes nearly 9 million individuals in the USA: of which 6.7 million are women. In RA and MS, female sufferers out number males 3 or 2 to 1 and with SLE, 9 women to just 1 man are afflicted. The fact that women are more susceptible to autoimmune diseases is well documented and has been recognised for several years; yet in orthodox circles the reasons why this happens remain unclear. Possible explanations under consideration include the role steroidal sex hormones have on creating an anti-inflammatory environment, general hormonal influences on immune responses, how antigen response during pregnancy is governed and the role of viruses.

It is interesting to note that the hormone secreted by the anterior pituitary (adenohypophysis) has an enormous influence on immune functions. Prolactin, which is not a member of the lipophilic sex steroid family which includes testosterone, oestrogen and progesterone, is expressed at higher levels in women than in men and is stimulated by oestrogen levels, hence the female hormonal ratio and the elevated prolactin levels during pregnancy. These high prolactin levels during pregnancy or generally can direct cells toward TH1 - dominated immune responses. This clinical data has generated hypotheses that the tendencies of females to mount larger amounts of TH1 like responses may, in part, explain the gender differences in susceptibility to autoimmunity, as this type of response creates pro-inflammatory pathways that are ‘required’ to develop the culture of autoimmunity within the system.

The endocrinological studies in this respect also bring under scrutiny the role of emotional health and the PNEI interactions in autoimmunity. Please remember that hormones are emotions transformed into biochemical form.

Both T and B cells carry receptor sites for prolactin; this I feel is conclusive evidence in revealing the importance of this hormone in immuno-regulation, and it is far from simply a hormone stimulating lactation.

Autoimmunity & Pregnancy

The sex steroidal levels during pregnancy promote an increase in anti-inflammatory activity. In this regard it is notable that diseases such as SLE, which has a strong antibody mediated component, can be exacerbated during pregnancy, while inflammatory response-based conditions such as rheumatoid arthritis (RA) and MS are sometimes ameliorated during pregnancy. Another effect of pregnancy is the presence of foetal cells in the maternal circulation.

It is known that foetal cells can persist in the maternal circulation for decades, so these long-lived cells may play a significant role in the development of autoimmune disease. Also, the exchange of cells during pregnancy is bi-directional (cells of the mother may also appear in the foetal circulatory system), and this has led to the postulation of the presence of mother’s cells in the male circulation could be a contributing factor in autoimmune disease.

If I take an objective observation of the dynamics identified in clinical practice, psycho-emotional components are of primary importance in autoimmune diseases. Iridology has been invaluable in clarifying and directing this type of analysis; and the PNEI cycle is of paramount importance with everything, yet it is vastly amplified with autoimmune disease.

Prolactin – The Thinking Hormone

There is substantial evidence to suggest that a wide range of leukocyte functions can be inhibited or stimulated by hormones released by the endocrine system and the central nervous system (CNS). In addition to Growth Hormone, thyrotropin releasing hormone (TRH), vasopressin, GHRH, HCG, ghrelin and androgens such as testosterone – prolactin (PRL) also has the ability for immunomodulation and regulating immune responses. As we have already referenced in the chapter on *The Amazing role of Prolactin*, with Hyperprolactinaemia, for example, the patient becomes very susceptible to recurrent respiratory infections and also possible infective or inflammatory bowel conditions.

Neuroendocrine Immunomodulatory Pathways

The CNS can modulate immunity and immune cells, like cytokines, can modulate immunity plus regulate neuroendocrine function and emotional behaviour. Therefore, it is paramount that we embrace this fact when we are presented with the analysis of the IPB. Prolactin has the ability to monitor immune cell function through endocrine mechanisms to modulate inflammatory responses.

Prolactin can act like a cytokine because it is released between cells of the immune system and regulates the lymphocyte responses by both paracrine and autocrine mechanisms.

The autonomic and neuroendocrine immunomodulatory pathways nurture and monitor each other's activities and functions.

Cytokines Influence on Neuroendocrine Regulation

It is interesting to note that cytokines cannot pass through the blood-brain barrier, thus many theories have surfaced on how they can have definite influence on the hypothalamus and later neuroendocrine activity. One realistic theory is that the information is communicated through the central nervous system via cytokine receptors. Support for this theory is backed-up with the discovery of Interleukin 1 receptors on the paraganglia of the vagus nerve.

Not only does the central nervous system modulate immunity, but also immune cells can modulate CNS function. Peripherally produced immune signals have been shown to affect a wide variety of CNS functions, for example, leukocyte-derived interleukin or IL-1 & IL-6. Cytokine-induced activation of the neuroendocrine axis is believed to occur mainly by promoting the release of CRH or VIP from the paraventricular nucleas of the hypothalamus. Also leukocyte-derived cytokines may act directly on the pituitary cells to promote various hormonal secretions. In 1992 Hu, Tannahill & Lightman suggested that leukocyte-derived cytokines might be more potent than endogenous CRH in eliciting ACTH release.

Fever & Infection-induced Behavioural Changes

Cytokines can also exhibit changes in the emotional state through the neuroendocrine immunological pathways. Their actions can go beyond the central neuroendocrine axis to create a peripheral fever, which is a natural immune response monitored via the hypothalamus. When cytokines create a fever, then we often feel tired, have muscular aches, sweat, we don't choose to drink, lose our appetite and generally feel like temporarily withdrawing from social interactions – in essence we can't be bothered. This is all due to elevated levels of cytokines altering the neuroendocrine activities.

HPA, Leukocytes, Peripheral Nerves & the Matrix

Every immune process can be considered a process of vigilance to distinguish between what can be considered as Self and what is not. This happens on both neuronal and non-neuronal bases. The B & T lymphocytes are capable of detection, memory and recognition. In view of these talents our lymphocytes travelling around the tissues and neuroendocrine systems should be considered as a mobile brain, with the macrophages acting as a mobile intestine!

Many researchers have shown and confirmed that stress impairs the feedback mechanism of the hypothalamic-pituitary-adrenal axis (HPA), to which leukocytes, peripheral nerves and the entire matrix (or Pischinger's ground substance) are sensitive. This is a part of neuroendocrinoimmunology. The intestinal mucosa is the largest immune system organ in the body. The cytokine-controlled reactions between the matrix, leukocytes and autonomic fibers are also correlated to the rhythmic loss of cells by the intestinal epithelium. These functional dynamics are very much dependent on healthy and balanced intestinal flora population, as discussed in *Immunology & Iridology*. Stress and chronic endocrine disruptions can alter the beneficial bacterial balance, and the large and small intestines can be the foundation of numerous health concerns, as we can assert through iridology.

In the bone marrow and intestinal mucosa, immune cells need to be associated with the terminal autonomic nerve fibers to reach full functional aptitude. Can this be another way of validating the use of the collarette in the iris as means of primary identification in neuroendocrinoimmunology?

Hormones and peptides that can release T and B cells can be located all the way through the MALT and GALT through the mucosal cells. Because of this, receptor sites can be formed for anterior pituitary hormones plus the single cell endocrine glands known as chromaffin cells, in addition to substance P, somatostatin, VIP, ILGF, ACTH and beta-endorphin, in the MALT. Indeed, the Gut Associated Lymphoid Tissue has been found to enter into both endocrine and neuronal feedback to the neuroendocrine system, thus we can see how emotions and stress factors can produce such dramatic instantaneous digestive symptoms, plus long term and chronic gas-

trointestinal diseases of all kinds. Environmental and other psychosomatic pollutants can compound all these, or, what Burton Goldberg describes as “Toxic Emotions”.

Iridology Profiles

Our first port of call should be the Inner Pupillary Border (IPB), as this is the primary extension of the central nervous system and neuroendocrine pathways. Second on our itinerary is the structure of the collarette for the immune and endocrine exchanges, plus evaluation potential of the autonomic nervous system. The region between these two parameters is our focus in the embryological development.

Inner Pupillary Border Dynamics to observe for, that highlight a disruption of neuroendocrine immunology include:

- Disruption of the Frontal IPB Structure
- Absent IPB at 360º
- Topography for the Spleen
- Topography for the Thymus
- Topography for the Tonsils
- Any of the topographies for the MALT
- Depression Axis
- S Sign (Topolabile)
- Globular Sign
- Omega Sign
- Wave Sign
- Undulation
- Squared Sign (Immune & Thyroid alterations)
- Pigment dispersion syndrome (PDS)

Neuroendocrine Structures of the Collarette

- Restricted Collarette
- Zig-Zag Collarette
- Misshapen Collarette
- Meerschaum Collarette
- Hypertrophy of the Collarette
- Birth Trauma Indentation at 360º
- Alteration of the Limbic System (Refer *Emotional Dynamics of the Collarette* Chart)
- Immune Axis
- Stress Axis
- Thyroid Axis
- Koch’s Sign

Prominent Ciliary Iris Signs observed in chronic disturbance of the neuroendocrine system include the following:

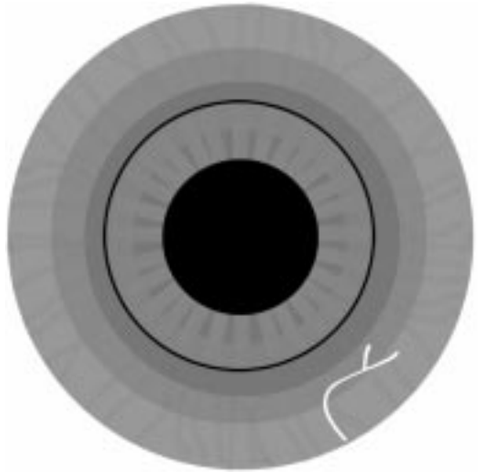
- Transversals
- Punctate pigments (Ferrum chromatosis)
- Pathochromia (Psora)
- Dyskratic and/or indented Brushfield’s Spots (Increased oxidative stress and mesencyhmal matrix congestion)

Deep & Multi Branched Transversal

This is a visually powerful transversal, which occupies a large portion of the ciliary iris, it loops from the limbus covering 40 degrees to the left in a sweep, with five or six chunky branches shooting upwards and terminating at or just prior to the external border of the collarette. We have compromise in the neuroendocrinological functions, with emphasis on the adrenal glands and cortisol secretions. Possibly as a result

of these factors inflammatory concerns can erupt throughout the system, including the digestive and respiratory systems, with a susceptibility to infectious and inflammatory episodes.

These markers should be regarded as secondary in the neuroendocrine immunology.



Deep Multi Branched Transversal

Acute Iris Signs for neuroendocrine immunological disruption include:

- Mammilations
- Vascularised transversals
- Pupillary Hippus
- Pupillary oscillations

Therapeutic Protocols

Colourpuncture

- Endocrine Co-ordination Balance
- Immune Ellipse - Violet
- GV Trauma points – Blue or Violet
- Lymph Drainage (Fear) Points - Yellow

Cranio-Sacral Therapy

Gemmotherapy

(pioneered by Dr Pol Henry)

Homotoxicology

- Macro Reg Granules
- NK Reg granules
- Nux vomica homaccord
- Lymphomyosot
- Prolactin D30
- Probiotic supplementation (Broad spectrum)

Herbal Medicine

In herbal medicine adaptogenic herbs are considered to be the primary support for the neuroendocrine immunology pathways, due to their broad range of support. I have found the following of particular benefit either used as a singular, or more often, integral to a polypharmacy approach:

- *Ganoderma lucidum*
- *Lentinus edodes*
- *Coriolus versicolor*
- *Grifola frondosa*
- *Astragalus membranaceus radix*
- *Eleutherococcus senticosus radix*
- *Arctium lappa radix*
- *Mahonia spp radix*
- *Larrea tridenta folia*
- *Sutherlandia frutescens herba*
- *Rhodiola rosea*
- *Curcuma longa rhizoma*
- *Withania somnifera folia*
- *Agropyron repens rhizoma*
- *Bupleurum acetum herba*

- *Rehmannia glutinosa radix*
- *Lomatium dissecta radix*
- *Galium aperine herba*
- *Trifolium pratense flores*
- *Pfaffia paniculata*
- *Harpagophytum procumbens radix*
- *Coleus forskohlii folia*
- *Piccrorrhiza kurroa*

The Pituitary Gland & Iridology

Research Introduction

I have been in a fortunate position to study the pituitary gland in-depth in relation to iridology through my ongoing work with endocrinology and pituitary out-patients and with the Pituitary Foundation in the United Kingdom.

From a clinical perspective I have been able to add what has already been documented in regard to the pituitary gland in Iridology.

A great swathe of work has been completed, but we still have much to explore. There are several research projects still running, not only in the UK, but also with colleagues in Ireland, Daniele Lo Rito in Italy, Oonagh Donnelly in Northern Ireland and several esteemed medical iridologists in Brasil.

Many conditions can be associated with dysfunction of both parts of the pituitary gland – the anterior and posterior pituitary glands. We will examine the difference between the two parts and their actions, and influence, plus the conditions associated with the pituitary such as microadenoma, prolactinoma, amenorrhoea, Acromegaly, Cushing's disease, PMT, Diabetes insipidus and many others.

We must be mindful that the hypothalamus exhibits control over the pituitary functions. The pituitary gland gained its misnomer of a name from the incorrect belief by Galen, the Greek physician, that it secreted nasal mucus. Pituitary translates as meaning mucus.

Anatomy & Embryology

The pituitary gland weighs around 500 to 800 mg and has a slightly ovoid shape. It lies beneath the brain in a bony cavity of the skull called the *sella turcica* or sphenoid bone. It is connected to the median eminence by the infundibulum or pituitary stalk. The gland itself is divided into two lobes that develop from two distinct embryological sources. The anterior pituitary lobe is derived from an upgrowth of the buccal epithelium called Rathke's pouch. This is ectoderm tissue.

As the strands of tissues between the primitive buccal epithelium and anterior pituitary diminish, clusters of epithelial cells can be left behind causing the development of cysts or even rare tumours, such as Craniopharyngioma. Some of these rare tumours can secrete ectopic hormones.

The Pituitary gland forms between the fourth and sixth weeks of gestation and has an ectodermic origin. It develops from two sources such as an upgrowth from the ectodermic roof of the stomodeum or hypophyseal pouch, and, a downgrowth from the neuroectoderm of the diencephalon or neurohypophysical bud. It is documented that Rathke's pouch forms from the basic notochord.

The anterior pituitary comprises of three distinct regions:

- Pars distalis
- Pars tuberalis
- Pars intermedia

The *pars intermedia* is a thin layer of corticotroph cells between the anterior and posterior pituitary. The pars intermedia also secretes melanocyte-stimulating hormone that stimulates melanocytes in the skin and iris, plus an endogenous morphine called Beta endorphin, which is released to control pain.

The *pars tuberalis* is a layer around the pituitary stalk that consists largely of gonadotroph cells such as FSH and LH. The third section is the biggest and is called the *pars distalis*.

The posterior pituitary lobe develops from neuroectodermic tissue from a downward growth of the primitive brain. The two lobes tend to function independently, but this is not always the case.

Anterior Pituitary

The major section of the pituitary gland is the anterior gland or *adenohypophysis.*

This gland consists of five different types of cells, which are named after the five hormone groups that they synthesize. These cells are not distributed uniformly; hence specific regions of the anterior pituitary gland are responsible for the synthesis of specific hormones.

The secretory activity of the groups of cells is influenced not only by the hypothalamic hormones, but also by feedback mechanisms involving hormones from the other endocrine glands.

85% of the blood supply for the anterior pituitary hypothalamico-pituitary is obtained from the hypothalamus via the hypothalamicoadenohypophyseal portal system; the remaining 15% is obtained directly from the superior hypophyseal artery. The blood then drains into the sinus between the meninges. The anterior pituitary is composed of non-neural secretory epithelial cells and is not directly connected to the hypothalamus.

Hormones of the Anterior Pituitary Gland

Hormones of the anterior pituitary gland are all large 200 amino acid-plus residues peptides or glycopeptides. The main hormones are:

- Thyroid Stimulating Hormone (TSH)
- Adrenocorticotrophic Hormone (ACTH)
- Luteinizing Hormone (LH)
- Follicle Stimulating Hormone (FSH)
- Growth Hormone (GH)
- Prolactin (PRL)
- Melanocyte Stimulating Hormone (MSH)
- Beta endorphin

The hormones synthesized by the anterior pituitary are released into the systemic circulation and act in two ways, such as main regulation of other endocrine glands and also direct effects on diffuse and distant organs and tissues. The release of anterior pituitary hormones often follows the pulsatile pattern of the releasing hormones from the hypothalamus.

TSH, ACTH, GH, LH & FSH all regulate other endocrine glands. Whilst prolactin can affect the entire body, breast, reproductive organs and neuroimmunology. MSH has a direct effect on the iris and skin. Beta-endorphin could be present anywhere we have pain.

The target organ of GH is primarily the liver. TSH's target is the thyroid gland.

Hormonal Feedback

When minor quantities of hypothalamic releasing peptides are secreted, other hormones are secreted by the pituitary gland after this type of secretion. These hormones are released in sufficient amounts to act on endocrine glands and tissues throughout the body. This is happening constantly, although we have natural peaks and troughs of activity throughout the day and night.

This release of pituitary hormones is regulated by other hormones, through what is known as the negative feedback mechanisms, for example thyroxine inhibits thyroid stimulating hormone (TSH) secretion from the anterior pituitary. Dopamine secreted from the hypothalamus inhibits prolactin from the pituitary. This is an important aspect of endocrine regulation, as in many cases of pituitary tumours, the mass prevents the hypothalamic releasing hormones from making contact with the anterior pituitary, so pituitary hormones decrease whilst prolactin levels continue to rise, such is the case with prolactinoma.

Interstitial Cell-Stimulating Hormone

The pituitary controls the interstitial cell-stimulating hormone (ICSH) secretions from the androgen producing cells of the testes. Herbs such as *Turnera* or *Catabua* can both work on melding a balance in any conditions involving testosterone levels.

Disorders of the Anterior Pituitary

Disease of the anterior pituitary can either be due to an excess of certain hormones or a deficiency of secretion. These can be triggered through benign tumours pressing on the anterior pituitary, other endocrine gland malfunctions, hypothalamic disturbance, stress, malnutrition or

- Panhypopituitarism
- Prolactinoma
- Microadenoma
- Hyperprolactinaemia
- PMT
- Amenorrhoea
- Uterine fibroids
- Endometriosis
- Subfertility
- Polycystic Ovary Syndrome
- Acromegaly
- Cushing's disease
- Lymphocytic hypophysitis

Tumours

Anterior pituitary adenomas comprise around 15% of all intracranial tumours. Pituitary adenomas do not metastasize, but they can be life threatening due to their location within the brain. They can cause hormonal changes by constant secretory excesses and also compression-related symptoms such as those affecting the following areas:

- Dura mater resulting in violent headaches
- Cavernous sinuses resulting in nerve palsies of the III, IV or VI cranial nerves
- Internal hydrocephalus can be caused by distortion of the midbrain
- Optic chiasm leading to visual defects, notably bitemporal hemianopia
- Pituitary gland leading to hypopituitarism

At the time of writing iris research is ongoing to differentiate between the three main types of functioning anterior pituitary adenoma. These include clear and precise details in relation to the prolactinoma, somatotroph adenoma producing GH and corticotroph adenoma producing ACTH in Cushing's disease triggering adrenal hyperplasia.

Research results will be published in the Advanced Iridology Research Journal in 2006.

Growth Hormone

Growth Hormone or GH is not one particular hormone, as many of us may believe. It is in fact apparent in numerous different forms. They have major roles during times of growth and development in both sexes. Growth Hormone shares a similar structure to prolactin and is secreted by the anterior pituitary after stimulation by Growth Hormone-Releasing Hormone (GHRH) via the hypothalamus, or even inhibited by somatostatin. GH is a single protein 191 amino acid peptide. The secretion of GH is pulsatile and exhibits a diurnal pattern, with the peak time of secretion when we are fast asleep.

The stimuli for GH secretion include decreased plasma concentrations of fatty acids and carbohydrates and increases in plasma amino acid concentrations.

Acromegaly & Iris Signs

An excess of GH secretion results in increased growth and is called Acromegaly, a condition usually treated by an endocrinologist. Acromegaly can take 15 to 20 years to develop and become apparent. The condition is characterised by a thickening of the skin around the face leading to increased growth of the nose and ears, plus the growth of the bones of the skull as well, leading to a prominent forehead and jutting jaw. Hands and feet become enlarged too. The disease has a slow progression, which may be missed by patients and their families.

Other symptoms for patients to observe for include:

- Visual disturbances due to compression from a pituitary tumour
- Splenomegaly
- Other endocrine imbalance such as adrenal or thyroid involvement
- Subfertility
- Enlargement of the liver, kidneys and heart due to continued excessive GH secretion
- Insomnia
- Hypertension
- Intolerance of temperature changes
- Increased greasy sweating
- Elevated serum calcium levels
- Large and widened feet
- Gaps in the lower teeth
- Larger nose
- Large tongue
- Larger lower jaw

A secretory tumour of the anterior pituitary gland commonly causes Acromegaly. Excess GH secretion before the onset of puberty leads to a condition known as Gigantism. In Gigantism there is an increase in height and muscle mass.

Iris signs consistent in Acromegaly from the clinical reviews include:

- Pituitary Crypt with adrenal crypt at 360º and respectively180º
- Embryological defect for the anterior pituitary in the embryological topographical location – see below
- Hypertrophy of the frontal IPB structure
- In only one case there was an Asparagus Lacuna apparent in the classical pituitary topography
- Vertical Ellipse of the Iris & Pupillary Tonus
- Hypertensive sclera vessels
- Small and wispy transversals in the spleen topography

Posterior Pituitary

The posterior pituitary is also known as the neurohypophysis. It is connected to the median eminence of the hypothalamus by the infundibulum or pituitary stalk. The cavernous sinuses including the III-VI cranial nerves lie laterally.

A direct neuronal connection with the hypothalamus forms *in utero*. This remains the only means of communication between these two structures.

Hormones of the Posterior Pituitary

Antidiuretic hormone (ADH)

A deficiency of antidiuretic hormone can cause a condition called Diabetes insipidus. This condition prevents osmotic control of the kidney so very dilute polyuria occurs, with up to 20 litres of urine being passed every day. This can cause potential problems with hypotension, dehydration and thirst. It can be caused by a tumour, trauma or previous surgery. An ADH stimulation test is used to distinguish between deficient ADH and generally unresponsive kidneys

An excess of ADH or vasopressin causes a Syndrome of Inappropriate ADH secretion. In the 1950s Josef Angerer described the "Vasopressin Picture" within the iris. This picture constituted diffuse red-orange pigments distributed close to the collarette. A vasopressin deficiency causes DI.

Refer to chapter on *Endocrine Functions of the Renal System* for further information on the interactions of ADH.

Oxytocin

Oxytocin is the second main hormone secreted from the posterior pituitary gland. This occurs in both men and women. In men oxytocin plays a role acting on reproductive smooth muscle in ejaculation. A deficiency of oxytocin can cause a failure to progress in labour or difficulty with breast-feeding or lactation in women. Oxytocin secretion increases to trigger uterine contractions and milk ejection in females.

Medical Tests

Medical Tests for anterior and pituitary disorders include:

- MRI Scans
- CT Scan
- Functional Testing of the Pituitary-Adrenal Axis
- X-Rays (mainly pre widespread CT and MRI usage)
- Cisternography
- Visual Field assessments through Ophthalmologists
- Serum Testing for prolactin, GH, FSH, LH or TSH levels
- Iridology

Emotional Dynamics Associated with the Pituitary

The pituitary gland carries the following emotional dynamics based on over 107 clinical cases:

Posterior Pituitary

- Fear of Independence
- Letting go and self-control
- Having no barriers
- Anxiety
- Fierce determination

Anterior Pituitary

- Fear of Dependence
- Problem solving
- Personal evolution
- Fear of wisdom
- Grief
- Grounded communication

We can also consider the pituitary gland as an integral part of the limbic system. Enormous stress can be placed on both the mother's and baby's pituitary gland if birth is forced, either through medical inducement or caesarean section. There is an alteration of the HPA axis and an inscription on the iris in such cases. It could even lead to future health problems, indeed some studies unearthed by Dr Michel Odent have shown that routine caesarean section leads to a higher incidence of asthma in children. My own observations of asthma patients under the age of 24 in the clinic, is that 80% of them were born via caesarean section.

Many blood tests reveal elevated prolactin in both sexes leading to respiratory compromise.

In *Cell Talk*, Dr John Upledger, the pioneering Cranio-sacral therapist, writes, "After the delivery the mother's pituitary gland continues to influence the child. This connection must be broken at some time. Otherwise the child will grow up to be a mama's boy or girl".

Iridology

Stress Axis

In iridology the pituitary gland forms an integral part of the Stress Axis with the hypothalamus and adrenals. Refer to *Iris & Pupillary Signs 2nd Edition*, *Immunology & Iridology* plus *Time Risk* by Lo Rito for further exploration and differentiation.

The Collarette

In suspected pituitary cases the collarette can prove to be extremely revealing in regards to directing our clarity in iridodiagnosis. With all clinically confirmed pituitary patients the collarette shows its value as a major iris landmark, by having prominent structures apparent in all cases.

All signs with the collarette are increased in importance when we have frontal flattening of the pupil in either eye.

In *Iris & Pupillary Signs, 2nd Edition* the Frontal Indentation of the collarette is described in-depth and it is often apparent in pituitary conditions. From this perspective it is not surprising to see that depression often forms a symptom of many pituitary-related conditions. Those pituitary patients with a frontal indentation of the collarette, you will likely observe, are more prone to deeper depression because of this.

New Embryological Topography

The embryological topographies in the iris for the anterior and posterior pituitary have been documented through extensive study from medically confirmed pituitary cases.

The degree of diagnostic accuracy was 90.5% from 74 medically confirmed cases. These included conditions such as the following - anterior lobe adenomas, prolactinomas, somatotroph adenomas - Acromegaly, Cushing's disease, (Corticotroph adenoma), Diabetes insipidus, Autoimmune Subfertility, Pre-Menstrual Tension, Amenorrhoea, and Multiple Endocrine Neoplasia Syndrome.

The most prevalent iris signs correlated to such conditions are:

- Crypt/Defect
- Solitary Lacuna - stairstep/leaf
- Radial Furrow (Radii solaris) with partial indentation of the collarette
- Small pigment granulation - orange/yellow or brown

Embryological Iris Topography for the Pituitary

The new topography for both irides is as follows:

- In the right iris at the internal border of the collarette at 344º to 349º, plus at 185º for the posterior pituitary.
- In the left iris we have a Pituitary-correlating topography at 16º in addition to 175º

Germinal Tissues & the Pituitary Topography

The double embryonic origin explains why the Pituitary is composed of two different types of germinal tissue:

* The Anterior Pituitary or *Adenohypophysis* arises from oral ectoderm

* The Posterior Pituitary or *Neurohypophysis* originates from neuroectoderm

This dual embryogenesis may explain why we have differing dual Pituitary topographies in both the right and left embryological iris. We are examining this possibility with Pituitary patients and Iridology & ongoing Pituitary gland research relating to pathologies of both posterior and anterior pituitary respectively.

Differentiation of Lacunae in Pituitary Conditions

Asparagus Lacuna

This lacuna is so-called due to its characteristic asparagus tip appearance. The tip points away from the collarette into the ciliary zone. The lacuna attaches to or appears out of the external border of the collarette. In rare cases it begins at the IPB. The asparagus lacuna is a solitary, unilateral sign, which can be found in both the frontal and ventral iris. It's presence can necessitate for rigorous questioning in regard to family medical history, if further suspicions are aroused individually, then Computerised Tomography (CT scan) may be necessary.

A frontal asparagus lacuna can indicate the following depending on location:

- Nasal polyps
- Adenoma of the pituitary gland
- Pinealoma (check for unreactive bilateral mydriasis)
- Prolactinoma (check for S sign on the IPB)
- Memory loss or concentration difficulties
- Hypothalamic alterations (such as temperature changes, extreme menopausal hot flushes, recurrent fevers or night sweats)
- Hemiplegic Migraines

When located ventrally then we are looking for predisposition to:

- Salpingitis
- Carcinoma, polyposis, myeloma or cysts in the uterus (fibroids), ovary or cervix (cervical dysplasia) in females
- Carcinoma or inflammatory concerns with the prostate, testes or epididymis in males
- Testicular cysts

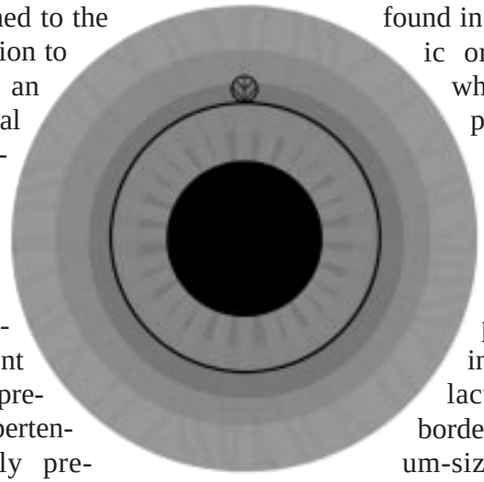
The asparagus is a relatively infrequent iris sign.

Nutritional requirements for the asparagus lacuna are:

- Potassium
- Essential fatty acids
- Selenium
- Germanium
- Phosphoric acid
- Vanadium
- Molybdenum

Circular Lacuna

A small encapsulated circle-shaped lacuna normally located in the posterior pituitary topography, always attached to the frontal collarette. In addition to the pituitary, we have an interaction with the adrenal medulla and ovaries. A circular lacuna is often present in those with Diabetes insipidus. Also hormonally triggered migraine, usually due to hypothalamic progesterone deficient types. A circular lacuna predisposes to pale skin, hypertension, oedema (especially premenstrually), tachycardia and chest pains and sexual concerns, such as decreases in libido due to anxiety.



Circular Lacuna

Internal Lacunae

Lacunae located internally to the collarette require differentiation as they can indicate the following:

- Gastrointestinal endocrinology
- Intestinal immune system – alterations of the MALT
- Embryological topography
- Deep lymphatic concerns

Leaf Lacuna

Many years of research and experience has illustrated to me that the Leaf lacuna relates to the function of the endocrine system and a tendency to hormonal imbalance, with particular emphasis on the Hypothalamus-Pituitary–Adrenal (HPA) axis. The psychoneuroimmunological involvement is highlighted with a leaf lacuna when found in the classical hypothalamic or pituitary topographies, when accompanied by deep pigments.

Leaf lacunae are attached to the collarette. The collarette is the location for where signs for endocrine pathologies will be found in 93% of cases. The leaf lacuna has a well-defined border, usually closed, medium-sized with an intricately veined structure, similar to that of a leaf.

I would suggest to you that when a leaf lacuna is observed then our attention should be drawn to a particular endocrine gland. This assertion is supported by the late and great Doctors Rudolf Schnabel and Dr Anton Markgraf from Germany, plus in more recent times by Dr Vincenzo Di Spazio in Italy.

Leaf lacunae can be located in the following topographies:

- Hypothalamus
- Anterior Pituitary
- Pancreas
- Thyroid
- Thymus gland
- Ovary
- Testes
- Pineal gland
- Adrenal cortex
- Breasts (hormonally dependent tumour formation)

When Leaf lacuna are observed with a significant hypertrophy of the IPB diameter, then we could be looking at the possibility of autoimmune and other disease manifestations:

- Goodpasture's syndrome
- Systemic Lupus Erythematosus (SLE)
- Scleroderma
- Hashimoto's disease
- Urticaria (with diffuse iris pigment)
- Myasthenia gravis
- Autoimmune Diabetes
- Polycystic Ovary Syndrome
- Subfertility in both males or females

Radii solaris

Deepened radii solaris at 360º or thereabouts in either iris can signify a general neuroendocrine disharmony. Depending on the radial's location it could relate to hypothalamus, pituitary concerns, plus the experience of anxiety and compromise the compensation of the limbic system. A radial furrow dividing the pituitary reflex can show a tendency to hyperprolactinaemia. (Please refer to chapter on *The Amazing Role of Prolactin*). A radial furrow closed at both ends will often demonstrate a condition resolved in a previous generation, so we have less cause for clinical concern with such signs in these significant topographies.

Inner Pupillary Border

Partial Atrophy

From research partial atrophy is frequently observed in:

- Uterine fibroids
- Polycystic Ovary Syndrome (PCOS research revealed an incidence if 78%, AIRJ Vol 5, 2005)
- Endometriosis
- Impaired hepatic hormonal clearance
- Hypothyroidism
- Hypoglycaemia in 823 out of 1500 cases
- Pituitary microadenoma in 22/34 cases

The S Sign

This sign looks like a letter "S", turned on its side, which stands out from how the rest of the IPB appears. The "S" shape can be a little distorted or inflamed at times. It is a solitary, usually unilateral sign. They tend to occur in the frontal aspect of the IPB. They can appear infrequently anywhere around the IPB though.

Their location in the frontal aspect of the IPB is not without foundation, as the S sign relates to the function of the hypothalamus and in particular the subsequent functions of the pituitary gland, especially prolactin release. Prolactin is released by the anterior pituitary gland and triggered by the hypothalamus.

Research in recent years with pituitary and other endocrine outpatients, has helped to determine the meaning of the S sign, and also help to accurately map the new embryological topography for both the hypothalamus and the pituitary gland.

Many patients with the S sign have a Prolactinoma. Prolactinoma account for 50% of all pituitary tumours. They are benign and tend to be smaller in females, because they are identified earlier due to absent or irregular periods. The S sign can also show a prolactinoma in the family or elevated levels of prolactin, which could be hyperprolactinaemia. Prolactin has a far reaching influence on many different systems of the body, which is important for homeostasis.

Elevated levels of prolactin can cause the following symptoms:

- Amenorrhoea or oligomenorrhoea
- Anxiety in both sexes (compromise of the HPA axis)
- Subfertility in both men and women
- Reduced resistance to infection, especially respiratory infection
- Lactation (early galactorrhoea in women and late galactorrhoea in men)
- Impotence in men
- Lethargy
- Reduced libido
- Oedema
- Hypoglycaemia – low blood sugar
- Hormonal assay of prolactin above 600 µ/ls in females and above 450 µ/ls in males

The S sign can relate to other pituitary problems, the more distinct and pronounced it is the greater the tendency to prolactin disturbances. The more distorted the sign, the greater the tendency to extreme menopausal or pre-menstrual symptoms a woman may experience. There is reduced potential of adaptability to big hormonal changes such as puberty, taking the contraceptive pill, injection of contraceptives, hysterectomy, pregnancy or the menopause.

The S sign is also observed in some cases of micro adenoma of the secretory cells of the anterior pituitary, which can cause tremendous headaches, exhaustion and visual disturbances. The visual disturbances and headaches are caused by compression of the tumour, which can cause a deficit in other hypothalamic or pituitary hormones.

Basically, on the physical level with the evidence of the S sign we are looking at an enhanced tendency to endocrine imbalance. Aspects of this work in iridology have been presented to endocrinologists and pituitary-patient groups in several countries.

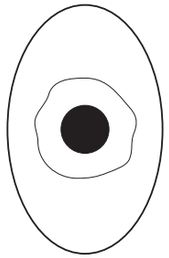
Frontal Pupillary Flattening or Introflession of the IPB/Iris margin

For the complete endocrine links to these two IPB signs please refer to the chapter on the *The IPB & The Endocrine System.* Pupillary flattening at 358º to 2º and 180º in both irides suggests further pituitary investigations. In prolactinoma such flattening

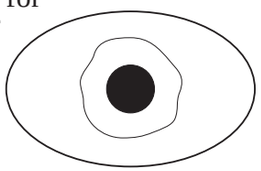
was apparent in 30 out of 34 clinical cases, and 30 out of 36 hyperprolactinaemia cases.

Iris Tonus

With the shape or tonus of the iris itself we have two differentiations that carry significance in the assessment of pituitary problems. They both relate to the hypothalamus primarily, but we can include the pituitary due to the control and influence the hypothalamus holds over the pituitary gland and its hormonal secretions.



A vertical ellipse of the iris suggests hyperactivity of the hypothalamic-pituitary pathways, such as with cases of hyperprolactinaemia.



A horizontal ellipse offers underactivity of the anterior pituitary, for example in rare cases of dwarfism in children where there is a deficiency of GH.

Iris Summary

In all cases of hyperprolactinaemia, Subfertility, PCOS, endometriosis, headaches, depression, uterine fibroids, extreme menopausal symptoms, adrenal problems and anxiety the iris needs to be checked for pituitary signs. In order of importance:

- Embryology – new topographical research
- Inner Pupillary Border
- Pupil Tonus
- Classical Topography
- Iris Tonus

Treatments for the Pituitary

Colourpuncture

There are many Colourpuncture protocols utilising various colours to treat the pituitary gland. Alternate blue, orange, yellow or turquoise can be of profound benefit depending on the problem. Endocrine coordination protocols provide excellent equilibrium and restoration of the hormonal system.

Herbal medicine

- *Vitex agnus castus semen* (adaptogen for the pituitary)
- *Angelica sinensis radix*
- *Nymphaea odorata rhizoma*
- *Dioscorea villosa radix*
- *Paeonia lactiflora radix*
- *Vaccinium myrtillus fruc*
- *Ganoderma lucidum* (all these medicinal mushrooms are pituitary adaptogens)
- *Lentinus edodes*
- *Grifola frondosa* (uterine fibroids)
- *Turnera diffusa folia*
- *Withania somnifera folia*
- *Eleutherococcus senticosus radix*
- *Trillium pendulum radix*
- *Rhamnus purshiana cortex*
- *Trifolium pratense flores*
- *Larrea tridenta folia*
- *Chondrus crispus*
- *Rhodiola rosea*
- *Sceletium tortuosum*
- *Centella asiatica*
- *Spirulina spp*

- *Chlorella spp*
- *Lycopus europaeus folia* (TSH)
- *Zanthoxylum clava-herculis cortex* (posterior pituitary)

Rhamnus purshiana or Cascara sagrada aged bark is a well-documented herbal laxative and detoxification agent for the gastrointestinal system. Perhaps what is not so apparent is its action on the balance of the anterior pituitary functions and pathways. It is well worth taking the first step in any pituitary treatment or management programme with the use of Cascara as a capsule or tincture.

Many herbal formulae and combinations can be harnessed from the above list, but we must have as a foundation Vitex, followed by the use of medicinal mushroom extracts such as *Ganoderma*, *Lentinus* or *Grifola* to support the neuroendocrine pathways and hypothalamic control over the pituitary. These medicines can be integrated with homotoxicological protocols and either Colourpuncture, Gemmotherapy or Reflexology as treatment support adjuncts.

If functioning correctly the pituitary can enable the system to eliminate toxic heavy metals, pesticide residues and even radiation exposure. The pituitary, together with many of the other endocrine glands, has a susceptibility to radioactive exposure and is particularly vulnerable to heavy metal residues such as lead or mercury taking hold. This is why herbal and nutriceutical agents such as *Chlorella, Spirulina, Larrea, Eleutherococcus, Grifola, Ganoderma, Rhodiola, Chondrus* and *Rhamnus purshiana* are so important for healthy pituitary function and detoxification of the gland.

Homotoxicology

- Pulsatilla 30c
- Gynacoheel
- Prolactin D6 – D30
- Hypophysi suis
- Pilosella Compositum (posterior pituitary)

Acupuncture

Nutrition

Adequate levels of the following are vitally important for the pituitary in all pituitary-related diseases

- Zinc
- Vitamin C
- B Vitamin complex
- Beta carotene
- Iron
- Potassium
- Germanium
- Selenium
- Molybdenum
- Chromium
- Magnesium
- Vitamin D

Gemmotherapy

- *Vaccinium vitis-idaea gemmae*
- *Rubus idaeus gemmae*
- *Carpinus betulus gemmae*

Cranio-Sacral Therapy

CST is of particular benefit to the pituitary. The gland depends on the rocking of the sphenoid bone for correct measures of blood flow, hormonal interactions and nerve communication. The *sella turcica*, sphenoid and ethmoid bones support it. The pituitary also interacts with the hippocampus in relation to memory.

Reflexology

Most Reflexologists agree that the topography of the pituitary gland can be located on the big toes. The pituitary is on the slightly lateral underside edge of the toe, two fingers width from the tip. The pituitary requires a hooked regular pulsing movement to bring the pituitary functions into balance. The gland does not respond as well to constant pressure. There is a school of reflexology in Scandinavia that only works on the big toe, excluding the rest of the foot. This is mainly due to the far reaching influence on the rest of the body from the hypothalamus, pineal and pituitary gland.

* For more specific pituitary signs in relation to iridology and therapy for the specific conditions please refer to the following chapters in this book:

The Amazing Role of Prolactin
A Naturopathic Perspective on Endometriosis & Iridology
Polycystic Ovary Syndrome & Iridology
Uterine Fibroids & Iridology

The Amazing Role of Prolactin

Introduction

Prolactin is an underrated hormone. Its many uses are often overlooked; indeed, many practitioners can be unaware of its far-reaching influence on many systems of the body. To date, prolactin has over 300 functions, more than all the other anterior pituitary hormones combined, and is considered essential for life. Prolactin is dynamic and has direct effects on numerous distant organs and bodily systems.

The intention of the work here is to present a cohesive illustration of the many reasons why a prolactin imbalance can be the trigger for many health concerns in both sexes. In order to avoid the fragmentation of different medical specialities, such as simply endocrinology, fertility or immunology, etc, the aim is to have a holistic comprehension of what prolactin is and does in the body, how its balance can be usurped and how the practitioner can help return any discrepancies back to equilibrium, and subsequently, return the patient on the right road back to health.

Like my work on the hypothalamus and iridology, with the research and dissertation of prolactin, it has been necessary to explore numerous diverse sources, from very different fields of expertise. This has proved to be a lengthy process and the sources are comprehensively listed in the Bibliography.

The Iridology research has been my own journey, with certain pointers when indicated in the text.

When we can fully understand the role of prolactin in the maintenance of homeostasis, we can often find the keys to open a complex matrix of locks to allow an individual to regain and nurture health.

Prolactin & the anterior pituitary gland (adenohypophysis)

Prolactin is defined as a single chain protein peptide with over 199 amino acids. It shares structures similar to Growth Hormone, but the intracellular domain of the prolactin receptor is different. Prolactin is probably most commonly acknowledged as the hormone that prepares the human breast for lactation and promotes breast growth during pregnancy.

Its actions, however, help control and modulate the response to stress, fertility, water and electrolyte balance; incorporating kidney functions, healthy biochemistry of the uterus, ovary, prostate gland and the testes, fluid balance and immune activity in the intestines, thyroid functions, balance of the Hypothalamic-Pituitary-Testes axis in men and the Hypothalamic-Pituitary-Ovary axis in women, growth, cell development and proliferation, modulation of immune responses; including activation of macrophages and lymphocytes and balance of functional activity within both the thymus gland and the spleen.

In addition to this prolactin helps motivate and moderate neurological functions and emotional responses, general psychological behaviour, patrol the body's metabolic pathways including lipid, carbohydrate and steroid metabolism.

With some anterior lobe pituitary adenomas we can have elevated amounts of prolactin being secreted. Hormonal assays are needed in such cases to determine the cause of the adenoma.

Dopamine and Prolactin Releasing Factors (PRFs) flow primarily from the Arcuate nucleas in the hypothalamus, and stimulate the control and secretion of prolactin from the anterior pituitary gland. The target cells are called lactotrophs.

Prolactin & Growth Hormone

Prolactin release from the anterior pituitary has greater pulses in the first third of the night, controlled by the hypothalamus and due to increases in neurological delta-wave activity, which are present during the deepest phases of sleep. This follows a similar pattern to the release of Growth Hormone (GH).

In fact, Growth Hormone and Prolactin are both members of the same family of hormones.

Prolactin, like GH, has evolved the ability to exert an idiosyncratic direct feedback action at target sites within the hypothalamus. Moreover, both stimulatory and inhibitory hypothalamic mechanisms appear to have evolved to control GH and prolactin in the absence of long-loop feedback; hypothalamic GnRH stimulates, somatostatin inhibits, GH secretion, whereas dopamine inhibits, and one or more putative prolactin-releasing factors stimulate the prolactin release from the anterior pituitary.

It is now accepted that in both the hypothalamic-prolactin and hypothalamic-GH axis, the short-loop feedback control includes both a suppression of *releasing-factor* release and a stimulation of inhibitory-factor release, if that's not a contradiction in terms.

Hypothalamic hormones are also distributed in the extrahypothalamic areas of the brain and also in peripheral locations in the body, for example we all experience somatostatin being released in the intestines and the pancreas.

From a pharmacological perspective it is documented that the following drugs such as Dopamine (L-dopa) and Bromocriptine both inhibit prolactin in the blood. GABA also suppresses prolactin. Dopamine has long-been thought of as the prolactin inhibiting factor, although no direct evidence exists, dopamine agonists such as Bromocriptine, can dramatically reduce prolactin levels.

Prolactin Releasing Factor (PRF)

The prolactin releasing factors include TRH, VIP, PHI, oxytocin, vasopressin and PACAP or *Pituitary adenylate cyclase activating polypeptide*. VIP's release is stimulated by serotonin in both the brain and the large intestine. Serotonin elevations stimulate the balance of prolactin and some suggest the reverse occurs also. Thus, it can be postulated, prolactin has a role in thwarting depression. If the levels go too low or even too high, when there is a grave imbalance, depression can be part of the symptom picture.

Both PHI and CRH contribute to stress-induced prolactinaemia.

Normal levels for prolactin

<400 µ/ls for males

<600 µ/ls for females

Other Activities Involving Prolactin

Prolactin is vastly important in the maintenance of healthy bone density. Whereas, excess thyroid hormones increase bone resorption, prolactin increases renal Ca 2+ reabsorption and hydroxylase activity.

Prolactin immunomodulation involves an intracellular integration of signals. Prolactin in the blood, lymph and neural pathways is essential in order for T-cells to survive and function correctly. It has been found that prolactin helps to inhibit parasitical infestation and also prevents bacterial infections from taking hold. However, elevated prolactin levels can leave the body, with particular emphasis on the respiratory mucosa, open to viral overload, and post-viral stress syndromes.

It is important for both the patient and practitioner to be aware that both the prolactin and glucocorticoid signalling pathways are integrated within cells of the immune system.

The arrival to the anterior pituitary of Thyroid Releasing Hormone derived from the hypothalamus results in the stimulation of prolactin and Thyroid Stimulating Hormone release.

VIP neuronal activation leads to the release of prolactin into the blood. VIP inputs from the suprachiasmatic nucleas to those neurosecretory neurons that regulate prolactin, such as TRH. VIP participates in the circadian regulation of prolactin.

Although prolactin stimulates and maintains breast growth and milk production, it works closely with, and requires the following hormones for this vital process to occur:

- Insulin
- Cortisol
- Oestrogen.

Prolactin increases the number of Luteinising Hormone (LH) receptors on the corpus luteum of the ovary and the Leydig cells of the testes. This results in increased synthesis and secretion of progesterone and testosterone in females and males respectively.

Prolactin helps with inhibition of GnRH release in the endocrine system when required, progesterone biosynthesis and also luteal cell hypertrophy during pregnancy.

Neuroendocrine immunomodulatory pathways

There is substantial evidence to suggest that a wide range of leukocyte functions can be inhibited or stimulated by hormones released by the endocrine system and the central nervous system (CNS). In addition to Growth Hormone, thyrotropin releasing hormone (TRH), vasopressin, GHRH, HCG, ghrelin, androgens such as testosterone – prolactin also has the ability for immunomodulation and regulating immune responses. As we have already referenced, with Hyperprolactinaemia, for example, the patient becomes very susceptible to recurrent respiratory infections and also possible infective or inflammatory bowel conditions.

The CNS can modulate immunity and immune cells like cytokines can modulate immunity, plus regulate neuroendocrine function and emotional behaviour. Therefore, it is paramount that we embrace this fact when we are presented with the analysis of the IPB. Prolactin has the ability to monitor immune cell function through endocrine mechanisms to modulate inflammatory responses.

Prolactin can act like a cytokine because it is released between cells of the immune system and regulates the lymphocyte responses by both paracrine and autocrine mechanisms.

The autonomic and neuroendocrine immunomodulatory pathways nurture and monitor each other's activities and functions. The hypothalamus, which synthesizes many of the releasing hormones acting on the pituitary, receives a rich autonomic innervation from the brainstem and is capable of synthesizing catecholamines, such as noradrenaline & adrenaline. Cortisol production can also be triggered here in biofeedback communication with the adrenal cortex.

In many cases, changes in the cellular electrical information to the hypothalamus can result in pronounced reduction of peripheral catecholamine production and subsequent cellular impairment of immunity. Neurohormones can have a profound effect on autonomic function, which is brought to our attention with iridology and the embryological development and subsequent gastrointestinal endocrine balance throughout our extrauterine life. The collarette structure helps to decode these hidden mysteries.

Stress

During stress catecholamines, cortisol, prolactin and natural opiates beta-endorphin and enkephalin are released in higher amounts than normal. Each can have a profound and complex influence upon the hormonal and immune systems. The statement that "stress suppresses immune resistance" is now an accepted norm within all holistic, naturopathic and conventional medical trains of thought. Modern science, as is often the case, confirms natural wisdom. The longer the stress, then, the greater the possible immune suppression. It should also be noted that the greater an elevation of prolactin and other hormones we can have in the bloodstream and CNS, the more chronic the immune suppression. These levels can become chronic if stress is sustained.

Prolactinoma

Abnormally increased prolactin secretion is associated with menstrual irregularity and infertility in women plus infertility in men with ejaculatory failure or impotence. Galactorrhoea is present in approximately 30% of affected females, but is rare in males since oestrogen priming is required for lactation, but it is a clinical possibility. In some texts or research papers a Prolactinoma is also referred to as a lactotroph adenoma.

All the anterior pituitary secretory cells have the potential to form tumours, however, the vast majority are prolactinomas. A prolactinoma is a benign clonally expanded tumour of the prolactin secreting cells in the anterior pituitary gland. It is the most frequent pituitary tumour, accounting for approximately 30 to 50% of all such tumours. A non-secretory prolactinoma accounts for only 20% of tumours and is simply a growth causing hypopituitarism.

Post-mortem studies have revealed that 23 to 27% of the general population have asymptomatic micro-prolactinomas.

Prolactinoma is much more common in women. The actual size of a Prolactinoma in a female patient will tend to be smaller than those seen in males. Symptoms present themselves sooner, usually due to changes in menstruation. Yet, in male patients they grow to larger sizes, probably due to the fact that men are less likely to consult with a doctor or take time to open a discussion on any health-related problem that includes sexual dysfunction.

When Prolactinomas grow in size they can cause visual disturbances and headaches.

Medical Investigations

- Magnetic Resonance Imaging (MRI scan)
- Computed Tomography (CT scan)

(Both these scans can be used to detect abnormal anatomy)

- Visual Field Assessment to ascertain any compression of the optic chiasma
- Blood Tests for elevated levels of prolactin
- Suppression Tests using hormonal analogues of inhibiting factors. Generally an adenoma will display reduced negative feedback, thus revealing the possible location of the problem on the endocrine axis

Medical Treatments

Conventional medical treatments for Prolactinoma usually include the following:

- The drugs Bromocriptine or Cabergoline, which are dopamine agonists, to reduce prolactin secretion
- Octretide, which is synthetic somatostatin, to reduce the secretion of Growth Hormone
- Surgical removal
- Irradiation to prevent adenoma reoccurrence

All of these treatments can carry serious side effects affecting all different parts of

the body and they all carry the potential to trigger an underactive pituitary gland. The drugs are considered first line orally active therapy for prolactinomas in 95% of cases as serum prolactin levels and tumours can be reduced quickly, but as noted above, side effects can and do occur. Surgery and radiotherapy are considered secondary approaches, if the primary approach does not work or causes too many side effects.

Hyperprolactinaemia

Stress is induced and can be maintained by living in a stressful environment. Remember that stress is a very individualistic concept and experience. What stresses one person, may not stress another. In *Human Endocrinology* Paul Gard states that prolactin secretion is so sensitive to the effects of stress, that the trauma of giving a blood sample for determination of prolactin levels may stimulate prolactin secretion, leading to falsely elevated readings. This is a very important fact the practitioner needs to be aware of.

We are consistently presented with new studies, plus unearthing older forgotten studies, linking the mind and emotional wellbeing with the function of the immune system and how these have intimate connections with the neuroendocrine and autonomic systems. It is not unreasonable to propose psychosocial triggers in cases of Hyperprolactinaemia. For example, Hyperprolactinaemia is a common experience for women after miscarriage. It may take many months or even a couple of years for the neuroendocrine systems to adjust and find equilibrium, even with therapeutic assistance, and for the symptoms of Hyperprolactinaemia to resolve.

Miscarriage or voluntary termination of a pregnancy can result in Hyperprolactinaemia, which may take awhile as above to correct itself.

Sometimes elevated prolactin levels can create a systemically conducive environment for Sarcoidosis to develop, in rare cases this can infiltrate the anterior pituitary. However, I have only ever seen this the once in a clinical setting.

Main symptoms of Hyperprolactinaemia in females include:

- Lack of energy
- Reduced libido
- Subfertility
- Susceptibility to respiratory infections
- Menstrual irregularities such as oligomenorrhoea (sparse periods), Menorrhagia (heavy periods) or even amenorrhoea (absent periods).
- Early galactorrhoea (lactation)
- General immune compromise
- Insomnia
- Fibroadenoma of the breast
- Fibrocystic Breast Disease (FBD)
- Weight gain
- Anxiety
- Hypothyroidism
- Oedema, usually abdominally, in the breast tissues or ankles

Main symptoms of Hyperprolactinaemia in males include:

- Lethargy
- Reduced libido
- Impotence
- Ejaculatory failure
- Impairment of spermogenesis
- Reduced salivary and serum testosterone levels
- Late galactorrhoea
- Gynecomastia
- Visual disturbances
- Loss of facial hair
- Anxiety
- Benign Prostatic Hyperplasia (BPH)

Over time Hyperprolactinaemia can cause hypogonadism. Hypogonadism is a common feature of pituitary adenoma and obviously leads to infertility in both sexes. Prolactin secreting adenomas are the most frequent sort of functioning adenoma and they secrete prolactin. Non-functioning adenomas prevent hypothalamic dopamine inhibition of prolactin release by compression, so that excess prolactin is released.

Causes of Hyperprolactinaemia

The causes of chronically elevated Prolactin levels can vary. The most abundant explanation for aetiology includes:

- Stress & emotional trauma
- Cranial trauma
- Pregnancy
- Sudden end to a pregnancy
- Anxiety
- Overstimulation of the immune system, for example with infection
- Hypothyroidism
- Blockage in the hypothalamus, between the hypophyseal portal concentrations of Thyroid Releasing Hormone
- Dehydration
- Drugs
- Micro or macro Prolactinoma combined with considerable elevations of plasma prolactin readings such as >5000 µ/ls
- Disrupted sleep patterns
- Dopamine D2 receptor antagonists
- Elevated oestrogen

Mammary Gland Development & Prolactin

The main, classically understood influence of prolactin is to stimulate the growth and development of the mammary glands, plus stimulate and maintain lactation. The prolactin secretions during pregnancy prepare the breast tissues for lactation. In fact, as the mother continues to breastfeed her baby, a continuing Hyperprolactinaemia inhibits fertility.

Autoimmune disease & Prolactin

As discussed in *Immunology & Iridology*, numerous hormones are involved with the development and sustaining of autoimmune diseases, such as rheumatoid arthritis or Systemic Lupus, Diabetes or Subfertility. Elevated prolactin levels as a result of stress or irregular endocrine adjustments can trigger hyperactive inflammatory pathways. Research findings have shown that both a reduction in childbearing and a lack of breastfeeding, which both contribute to hyperprolactinaemia, can have long-term effects on a woman's health, often leading to increased risk of rheumatoid arthritis. Prolactin, when out of balance, can confuse the neuroendocrine system in relation to inflammatory triggers.

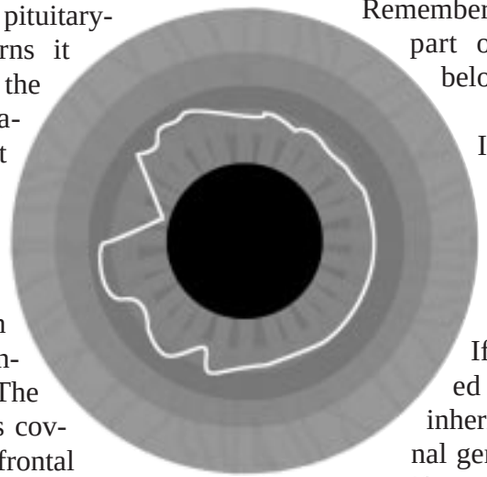
Iridology

For complete analysis with clarity we need to observe the following structures within the eye with microscopic magnifications of between 40x to 60x.

The greater and more prevalent the accumulation of these iris and pupillary signs we have the greater the degree of tendency to prolactin disturbances, due to various causes.

Collarette Structure

From research with over 80 pituitary, hyperprolactinaemia and pituitary-related endocrine concerns it has become apparent that the localised frontal indentation is the most prominent and consistent iris sign for pituitary disease in classical iridology terms.



Indented Collarette

The frontal indentation generally suggests tendency to depressive illness. The indentation in these cases covers a broad section of the frontal collarette. However, in pituitary and related diseases, where we have prolactin imbalance, the collarette is locally indented towards the pupil, covering only a few degrees of difference.

The indentation can appear on its own, but is usually caused by the following signs in order of importance pressing towards the pupil:

- Local Indentation
- Indentation with localised hypertrophy
- Indentation with Radial Furrow (both minor or major radii solaris)
- Indentation with Leaf lacuna
- Indentation with pigment patch (orange or brown)

The collarette structure can be quite misshapen in this area, with a wave type effect of alternating indentation and distension.

We can also have a thickened slant of the collarette towards the nasal side, emphasising the tendency to Hyperprolactinaemia.

Remember all these signs can form part of the Stress Axis (see below).

If the radial furrow terminates at the IPB @ Space 1 then it is of greater importance and requires further scrutiny.

If the collarette is contracted or restricted then the inheritance is from the maternal genetics. On the other hand, if we are faced with a distended collarette we have a paternal genetic dominance manifested in the patient.

The Inner Pupillary Border (IPB)

Space 1 between 351.5º and 8.5º around the circumference of the IPB is the organic zone for actual problems with the brain, pituitary, pineal or hypothalamus.

Disorders of the prolactin releasing factors are specific to erosion or a local absence of the IPB @ 360º

Hyperprolactinaemia is identified between 355º and 5º along the IPB and according to the research the most prevalent signs are:

- S sign
- Local Hypertrophy of the IPB
- Introflession
- A combination of all of these

Prolactinoma can be identified on the IPB through the following:

- S sign
- Extroflession
- General hypertrophy of the IPB

The presence of the S sign is discussed in greater detail in the chapter on *The IPB and the Endocrine System*.

A subtle pupillary flattening adjacent to these signs enhances their meaning to a previously resolved condition or an actual current pathological process.

Pupil Tonus

In 74 pituitary and hypothalamic outpatients studied the slight frontal flatness of the pupil was observed in 61 cases, including a great number of Hyperprolactinaemia, Kallmann's syndrome and Prolactinoma patients. The flattening is a subtle sign, like the frontal indentation of the collarette, not a gross distortion of the pupil. This is why we require such high and clear magnifications of the iris and pupil.

The pupillary dynamic tends to mydriasis, but with reactivity to illumination changes. However, the retarded speed to reaction suggests hypoadrenal involvement. The mydriasis is usually bilateral.

Embryological Topography

From the research with pituitary patients we have been able to thoroughly document the signs involved and chart the profound importance of the pituitary gland and hypothalamus. These signs are from a new topography in iridology, postulated through joint research between myself, and Dr Daniele Lo Rito in Italy. We comprehensively presented this work for the first time over a three-day course near Padova, Italy at the end of May 2004.

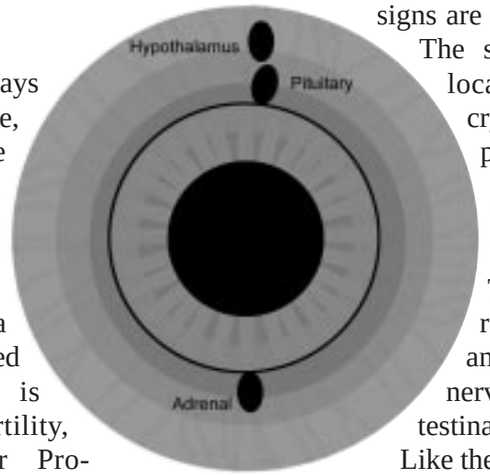
The signs are located inside the collarette, between the internal border of the collarette and the pupillary edge. In essence, we are looking at an embryological map of the entire body within the pupillary zone. It can be considered a map within a map.

The signs relate to the embryological development and inheritance of the individual. The most important embryological signs I have found in Prolactinoma and Hyperprolactinaemia are:

- Crypt/Defect sign
- Lacuna
- Radial furrow
- Small pigment patch

Leaf Lacuna

The Leaf lacuna is always attached to the collarette, usually in any endocrine topography, including any of the eight possible locations for the pancreas. In prolactin deficiency or excess we have a leaf lacuna at 360º attached to the collarette. This is observable in Subfertility, Hyperprolactinaemia or Prolactinoma.



The Stress Axis

The leaf lacuna is a genetic footprint and suggests elevated prolactin levels in the family medical history.

The Stress Axis

The presence of the unilateral Stress Axis predisposes an individual with any of the above signs to Hyperprolactinaemia and anxiety related symptoms in regard to any unchecked dysglycaemia or pre-menstrual symptoms plus subsequent menopausal symptoms involving anxiety, depression, panic attacks, tachycardia, confusion, feeling overwhelmed or concentration difficulties. There is also an increased susceptibility to chronic infections and fatigue.

For differing perspectives on the Stress Axis, please refer to *Time Risk* by Dr Daniele Lo Rito and *Immunology & Iridology* by John Andrews. The Stress Axis includes prominent signs in all three topographies for the Hypothalamus, Pituitary and adrenal glands in one iris. All the signs are attached to the collarette. The signs tend to include a local indentation, lacuna, crypt, and radial furrow or pigment patch.

Tongue Analysis

The tongue is another reflection of the crossover and meeting point for the nervous, hormonal, gastrointestinal and immune systems. Like the feet in reflexology or the eyes in iridology, we have many nerve and organ reflexes within the structure and on the subtle surface of the tongue. Several signs on the tongue are consistent with elevated prolactin levels whatever the cause:

- Flat & wide, which looks similar in cases of hypothyroidism
- Thickened white coating, which does not clear during the course of a day. The thick coating remains and triggers unpleasant taste sensations in the patient's mouth
- Deeply grooved throughout the centre, differentiate between a non genetically-determined, inherent structure
- Scalloped edges – waviness on both edges
- Pronounced root to the rear like nodules, but gnarled elsewhere with little rooting

Nails

The fingernails can either be a clinical pointer in conditions by themselves, or they can give clarity or add weight to a diagnostic assessment. In cases of Hyperprolactinaemia the following nail formations will become apparent. In some cases the nails will present multiple signs:

- Brittle
- Slow growing
- Reddened skin edge to the nail bed
- Deeply grooved with vertical ridges
- Containing multiple white flecks in cases involving zinc deficiency

Treatment Protocols

In all areas of the world where botanical medicines have a strong foundation and history of usage, we have herbs to act on both the hypothalamus and pituitary in order to balance prolactin levels. From China we have *Angelica sinensis*, from Northern Africa and the Mediterranean European coastline we have *Vitex*, from Central America we have *Turnera diffusa*, also from the North Americas we have *Serenoa* and *Dioscorea*, in the UK we revere *Arctium lappa radix*, from Russia we have *Eleutherococcus senticosus* and from the Indian sub-continent we have *Withania somniferum*.

Vitex agnus-castus* or *Vitex negundo

Clinical studies in Germany have found that *Vitex semen* enhances the corpus luteal development (thereby correcting a progesterone deficiency) via a dopaminergic activity on the anterior pituitary gland, which inhibits prolactin secretion, normalises the menstrual cycle, encourages ovulation and is indicated for any pre-menstrual irregularities. Several studies have revealed that progesterone deficiency could be caused by unopposed oestrogen.

Several compounds in Vitex are responsible for the prolactin-inhibiting activity. This beautiful and shrubby Mediterranean member of the Verbena family is rich in Iridoid glycosides such as aucubin and agnuside, plus flavanoids such as methoxylated flavones or casticin, plus essential oil containing monoterpenes and sesquiterpenes. Methoxylated flavones can exact an anti-androgenic effect on the system, thus helping with the traditional use of decreasing libido in monks & men, and also with the balance of infertility or PCOS in females.

Vitex is indicated for the following:

- Balance of hypothalamic functions and pathways
- Kallmann's Syndrome
- All types of PMT, except Type C (which is usually linked to underlying dysglycaemia)
- Subfertility due to Hyperprolactinaemia with elevated testosterone levels and/or decreased progesterone levels
- Acne vulgaris, especially during puberty
- Extreme mood swings during puberty and the menopause
- Mastalgia
- Hormonally-dependent oedema
- To decrease libido in males
- To increase libido in females
- Endometriosis
- Polycystic Ovary Syndrome (PCOS)
- Uterine Fibroids
- Secondary Amenorrhoea
- Oligomenorrhoea
- Polymenorrhoea

- Menorrhagia
- Menopausal balance
- Cushing's disease
- Prolactinoma
- Pituitary adenoma
- Craniopharyngioma
- Withdrawal from HRT
- Headaches
- In Benign Prostatic Hyperplasia when combined with *Serenoa*, *Turnera* & *Urtica radix*
- Inhibition of *Candida albicans* overgrowth
- Inhibition of *E.coli* infection

Contra-indications:

- Modern herbal thought suggests avoidance if taking the contraceptive pill
- With dopamine receptor antagonists
- Epilepsy
- If experiencing an Urticaria flare-up

Vitex can be used in combination with any of the following as fresh liquid extracts:

Paeonia lactiflora radix

This improves filtration and organisation of hormones through the liver, exhibits similar properties to *Vitex* in regards to balance of the menstrual cycle. *Paeonia* is supportive of the liver, ovaries, adrenals and hypothalamus. It is a plant that can cross the blood-brain barrier, thus it can have a pronounced influence on extreme menopausal symptoms.

It helps to keep prostaglandin cascades in check, thus monitoring inflammatory reactions, plus balances blood sugar levels. It is wonderfully aromatic and its heady scent reminiscent of vanilla enriches the air around our gardens in late spring. The root is rich in alkaloids and flavonoids like *paeonol* and is specific for treatment in cases of PCOS and Fibroadenoma of the breast. It is also of paramount importance with any hormonally related disorders, when there are elevated serum levels of testosterone and elevated prolactin levels, such as infertility or Hyperprolactinaemia. *Paeonia* can also exhibit a slight sedative effect and relax the CNS.

In Traditional Chinese Medicine, *Paeonia* is called *bai shao* and considered a *xue* herb. It shares this bestowment with *Angelica & Rehmannia.* Menstrual problems and insomnia are common in those with a deficiency of *xue.*

Contra-indications:

Large doses are to be avoided internally. Consult with experienced practitioner to monitor the dosage amount and frequency, plus length of treatment.

Dioscorea mexicana radix

Dioscorea is a progesterone enhancer that is of particular importance when oestrogen domination is present within the system. I have found *Dioscorea mexicana* and *Dioscorea villosa* to be extremely useful at maintaining progesterone levels during pregnancy. It can be used safely and is a wise choice by the clinician for any women with a history of miscarriage, to assist in facilitating and maintaining a pregnancy. It combines very well with *Eleutherococcus*

in this regard. *Dioscorea,* or Wild Yam root, helps to modulate hypothalamic function and both prolactin and serotonin secretions, particularly within the intestines and pancreas.

Dioscorea is rich in saponins, which are the foundational phytosterol materials for the contraceptive pill, hydrocortisone, anabolic steroids and sex hormones. Indeed, the original material for the pill is called *dioscin*. Wild Yam is rich in this saponin *dioscin.*

The active parts of *Dioscorea* are only soluble, thus useable and assimmable by the human body in grain alcohol, thus, a fresh tincture liquid extract should be used.

Dioscorea has a reputation for anti-inflammatory activity and this is probably due to the steroidal-like constituents. It can be used in the treatment of autoimmune conditions like Rheumatoid arthritis, Crohn's disease or Ulcerative colitis. Intestinal dysbiosis, which can be a forerunner for systemic inflammatory episodes, responds very well to the prescription of *Dioscorea* as a tincture. In Crohn's disease saponin-rich herbs such as *Dioscorea* help with permeability in the small intestine, thus helping with inflammatory responses, absorption of plant nutrition and endocrine exchanges. Dioscorea can also be used in the management of diverticular disease due to its anti-inflammatory and anti-spasmodic actions.

Recent research has confirmed the traditional view of the Native American Indians that *Dioscorea* is useful to maintain liver health. It was found that the administration of Wild Yam could have a profound effect on both endogenous and dietary cholesterol metabolism within the hepatic structure. In fact Diosgenin, a steroidal sapongenin, resembles cholesterol in its structure and it was found that in addition to lowering cholesterol levels, both hepatic and intestinal synthesis were improved. It was also found that we could have increased faecal elimination of unabsorbed cholesterol without affecting the excretion of bile acids.

As discussed in *Immunology & Iridology*, cholesterol is one of the building blocks in the production of hormones.

I use *Dioscorea* extensively to treat extreme menopausal symptoms, as it can elevate oestrogen and progesterone production, particularly in reference to the role taken on by the adrenals after the beginning of the menopause. *Dioscorea* is supportive of both hypothalamic and pituitary functions. Wild Yam also has anti-spasmodic activity and can be relaxing on the central nervous system, thus helping with the associated anxiety, panic or depressive symptoms associated with Hyperprolactinaemia, PMT or menopausal changes.

Dioscorea can also be used to balance endometriosis, pelvic inflammatory disease (PID) and within a treatment plan for Subfertility (which could be caused by the previously cited conditions).

Despite commercial suggestions I have found no reason, other than placebo effect, to see how creams made from wild yam can exhibit hormonal balance on the human system.

Contra-indications:

- History of cholestasis in pregnancy, mainly due to high saponin content
- Septic cholecystitis
- Gilbert's syndrome
- Crigler-Najjar Syndrome
- When taking chlorpromazine
- With treatment for Hepatitis C with beta-interferon
- Cirrhosis of the liver
- Liver carcinoma
- Impacted gallstones confirmed by ultra-sound

Nymphaea odorata radix

Nymphaea, or White Pond Lily, is made from the liquid extract of the fresh rootlets. It can have a distinct influence on the endocrine system in both men and women, and I have used it extensively with those experiencing Hyperprolactinaemia, Prolactinoma, and uterine fibroids too. It is largely ignored in herbal medicine, although I am not certain why this is, especially when we can view its safety, versatility and ease of application. It is also very easy to cultivate, as long as a clean body of water is available.

Dr Christopher in the USA stated how well *Nymphaea* could cleanse, tone and detoxify all the mucus membranes, relieving the pain of ulcerated or inflamed surfaces, especially within the reproductive tracts. Menstrual pain or pain due to growths in the prostate, fallopian tubes, uterus, testes, pituitary or ovary can all be treated with *Nymphaea radix*. The fact that the rootlets are rich in both alkaloids and flavonoids support these claims. In Eastern and Mediterranean Europe the flowers and leaves are utilised in traditional herbal medicines and applications.

I would suggest the use of *Nymphaea* after consultation for the treatment of:

- Benign Prostatic Hyperplasia (BPH)
- Uterine fibroids (in combination with Vitex)
- Polycystic ovaries (PCOS)
- Ulcerating cervical carcinoma
- Testicular cysts
- Salpingitis
- Endometriosis
- Lichen sclerosis
- Vulvovaginitis
- IBS in infants
- Uterine carcinoma
- Gingivitis
- Enuresis
- Hyperprolactinaemia
- Prolactinoma
- Subfertility

Pfaffia paniculata radix

My esteemed Brazilian colleagues introduced me to Pfaffia. They informed that the root of *Pfaffia* is rich in vitamin C, germanium, selenium, zinc, beta-carotene and many other anti-oxidant substances. In Brasil it is considered an adaptogen, similar to Siberian ginseng or *Astragalus*. It is used to restore equilibrium to a damaged immune system or the wildly out-of-kilter endocrine system.

It has a profound effect on the hypothalamus, pineal and pituitary glands. It can be used to maintain the activities of the HPA axis, and can be put to good use for autoimmune inflammatory conditions, such as rheumatoid arthritis. This is due to anti-inflammatory phytosterols, such as stigmasterol.

It has a traditional use in infertility and the treatment of cancers, especially skin melanoma. Many elderly patients drink the tea freely as preventative nutrition and when convalescing.

Modern research has confirmed its ability to eliminate excess uric acid from the system, thus helping in cases of gout and polyarthritis.

Thomas Bartrum in the *Encyclopaedia of Herbal Medicine* quotes anecdotal evidence stating that *Pfaffia* minimises the side effects of the contraceptive pill.

Like all adaptogenics, *Pfaffia* has many uses – scientifically or traditionally noted – its many qualities can be harnessed to confer prolactin balance and hypothalamic homeostasis.

Angelica sinensis radix

Prolific herbal author Christopher Hobbs terms *Angelica sinensis* as the female equivalent of Siberian ginseng. The plant, member of the carrot family, is native to Korea, Japan & China and it is estimated to be used by millions of women to balance menopausal and menstrual symptoms. The roots of the plant are used and they contain phytosterols, coumarins and also essential oils.

Although used to counter extreme menopausal symptoms, some research on *Angelica* or Dong quai has been found to be of no benefit to women during the menopause. However, I have seen clinically that the use of *Angelica sinensis radix* as a liquid extract can help women with hot flushes, depression and low energy during the menopause – to the complete alleviation of these symptoms. The flipside to this is that I have seen a small number of susceptible women have all their symptoms worsened by the administration of *Angelica sinensis*. The ratio of good effects to bad is around 90% to 10%.

Basically, under normal circumstances *Angelica* is an endocrine adaptogen that most women experiencing menstrual and stress-related difficulties, respond to very well with no ill effects. Angelica seems to be coerced by prolactin in fortifying the system against degeneration and disease.

Some studies have shown *Angelica*'s virtues in the therapy for infertility (of which prolactin is involved), cirrhosis of the liver, hepatitis, protection of the immune system against hydrocortisone, anaemia and dysmenorrhoea.

Contra-indications:

- If taking Warfarin
- With beta blockers
- It should also be contra-indicated during the first trimester of pregnancy
- Tendency to miscarriage
- Heavy periods
- Diarrhoea
- Gastro-enteritis

The following can also be utilised in the treatment of prolactin imbalance and the control of the emergent symptoms, due the background causes. Further information on these are elaborated upon in many other chapters:

- *Eleutherococcus senticosus radix*
- *Corydalis spp. rhizoma*
- *Withania somniferum folia*
- *Thuja occidentalis folia*
- *Turnera diffusa folia*
- *Serenoa serrulata fruc.*
- *Lentinus edodes*
- *Cordyceps sinensis* (preferable as a capsulated powder)
- *Coriolus versicolor*
- *Lycopus europea herba*
- *Glycrrhiza glabra radix*
- *Tribulus terrestris*
- *Avena sativa semen*
- *Rehmannia glutinosa*

Nutrition

I have found the following vitamins and minerals of vital importance in helping to maintain prolactin production and balance. Foods rich in these nutrients are essential for assimilation. Spirulina or Chlorella can prove to be very helpful in such cases, but comprehensive lists of these foods and nutrients appear in the appendices.

- Zinc
- EFAs
- Chromium
- Molybdenum
- Vitamin C
- Germanium
- Selenium
- Iron
- Folic acid
- Pantothenic acid

Colourpuncture

The application of Colourpuncture to the skin at various reflex points can assist in stimulating, resolving or modulating underlying physical and emotional imbalances. It is particularly useful in achieving endocrine homeostasis. I have found its clinical use for Hyperprolactinaemia extremely helpful, mainly due to the stimulation and modulation of both hypothalamus and pituitary.

Peter Mandel developed the Endocrine Coordination points, and we can also refer to many other singular or groups of precise points to utilise, in addition to electroacupuncture points on the ears and Esogetic Interference Therapy – see Appendices.

Cranio-Sacral Therapy (CST)

Due to its comprehensive, systemic influence, CST can help exert balance to the neuroendocrine and immune systems, through action at a cellular level via the cerebrospinal fluid and balance of the cranio-sacral rhythm. CST has a profound effect on the hypothalamus, pituitary and pineal glands – thus modulating all activity of and from the various pathways that are controlled by these three endocrine organisers. I would suggest a cranio-sacral therapist to be trained by the Upledger Institute.

Reflexology

Advanced Reflexology Techniques, as developed by Tony Porter, can really enable the hypothalamus, anterior pituitary gland, thyroid and adrenal glands to begin to function correctly, thus promoting a return to normal levels for prolactin, growth hormone, thyroid hormones, catecholamines and cortisol.

Homoeopathic Medicine –

Homotoxicology Biological Therapy

- Prolactin D6
- Prolactin D15
- Prolactin D30

Water Therapy

Research has found that when our body becomes chronically dehydrated we are faced with the same establishment of physiological processes that occur when the system is attempting to deal with psychological or emotional stress. From all perspectives we can consider dehydration a major stress. After years of consultation with thousands of individuals I can hazard a conclusion that most people in the UK and the USA are probably chronically dehydrated, without realising it. Most people just don't drink enough water or take on enough fluids through fresh fruit, herbal teas, juices, etc. Caffeine-containing drinks, fizzy drinks, alcohol due to its suppression of vasopressin release from the posterior pituitary and cordial drinks are to be avoided.

The dehydration can be identified through cancrination or drying of the lens, assessment of the sclera and tongue analysis. Paradoxically, the patient may even experience systemic oedema, or fluid retention, this can be hormonally dependent such as with PMT, and the patient will have scalloping of the buccal edges.

The impact of stress and dehydration creates a double-whammy and vicious circle, which tilts the equilibrium of the endocrine system with chronic changes in the levels of corticotrophin releasing hormone, vasopressin, renin-angiotensin system, endorphin production and prolactin. During stress large amounts of these substances are secreted and we find that these systems remain "triggered" and, even when out of a stressful situation, this process is maintained.

Dr Batmanghelidj, one of water consumption's main proponents summarises that "dehydration causes stress, and stress will cause further dehydration."

During the time of gestation, fluid intake is paramount for the health of the mother and foetal development. Prolactin is a central hormone during and after the pregnancy, as we have previously discussed. Every time a cell gives rise to a new daughter cell 75% or more of its volume has to be taken up by water. Foetal growth is dependent on adequate supplies of water. Prolactin can be found with water in the placenta and amniotic fluid.

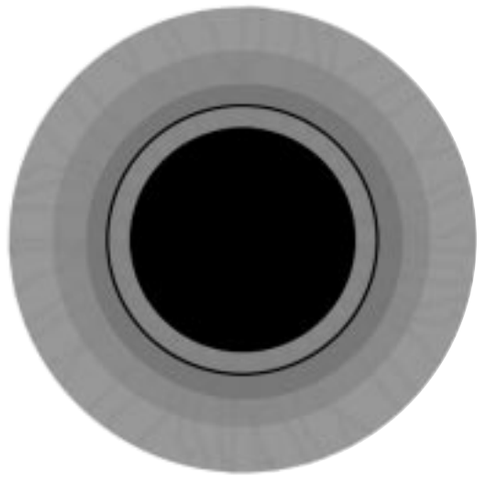
Some research has shown that there is a relationship between stress, chronic dehy-

dration, persistently elevated prolactin levels, prostate tumours and breast tumour development. The remedy to this seems to be increased pure water intake for men and women, especially during times of change or stress.

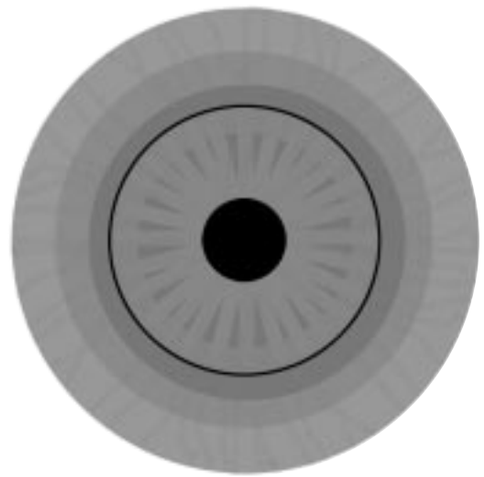
I am always asked how much water or, even, how much more water will I need to drink? It is a very good question and the answer is open to interpretation. Many factors influence the limit of water, such as previous medical history, previous or current dietary and beverage misdemeanours plus our intake of juicy fresh fruit or salad vegetables. I suggest that we need to drink copious amounts of pure water throughout the day and not in the evening, as this may trigger nocturnal urination. Copious amounts of water means, as much as we can tolerate.

Water can have a balancing influence on the prolactin levels over time. thus helping to break the spiral of stress.

Endocrine Pupillary Dynamics



Mydriasis



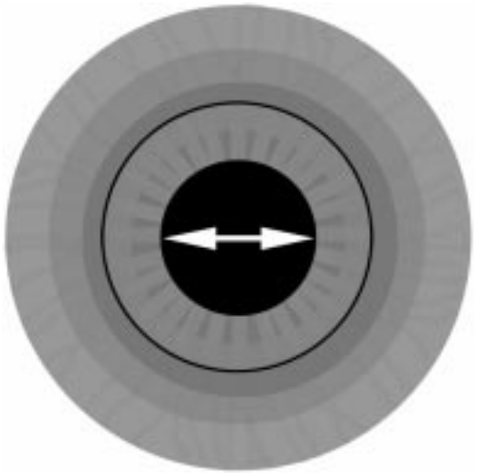
Miosis

Mydriasis

- Chronic Adrenal stress (with no reaction due to changes in the intensity of illumination)
- Cushing's syndrome
- Endometriosis
- Can be present with Polycystic Ovary Syndrome (adrenal alterations)
- Vulval vestibullitis
- Cortisone ingestion and other steroid drug use
- Hyperthyroidism (only found in both pupils with Exophthalmos)

Miosis

- Often with Subfertility
- Diabetic coma



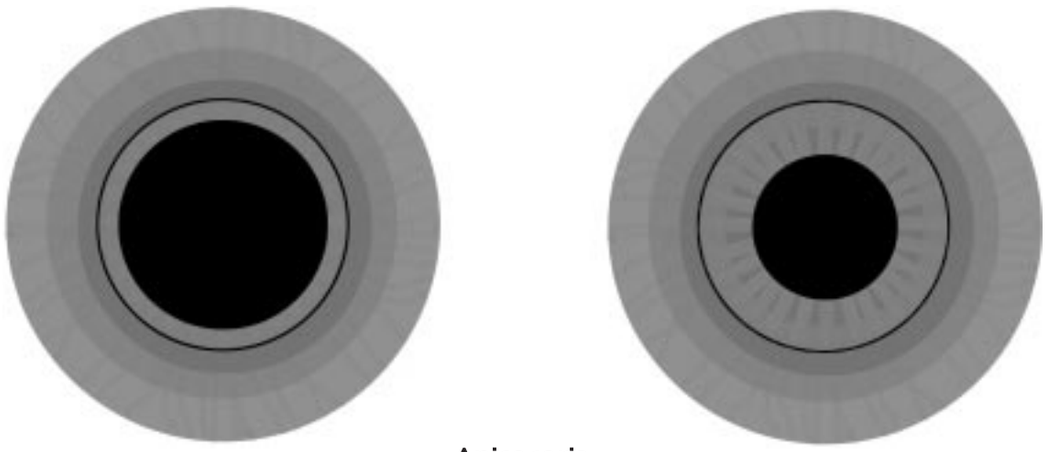
Hippus

Hippus

- Acute adrenal stress
- Uterine fibroids in a third of cases
- Polycystic Ovary Syndrome (PCOS) in 40% of cases

Anisocoria

- Rare neoplasia of the pineal gland such as pinealoma
- Due to pain of Pancreatitis (Dilated pupil could be either in right or left eye)



Anisocoria

* Full differentiation of pupillary signs is featured in *Iris & Pupillary Signs 2nd Edition* and *The Pupil in Iridology* CD-ROM

The IPB and the Endocrine System

In the opening chapters on the Inner Pupillary Border in *Iris & Pupillary Signs, 2nd Edition*, I wrote the following "The Inner Pupillary Border is formed out of the uveal leaf, which extends from the retina, which connects with the optic nerve and the Lateral Geniculate Bodies within the brain. It is the only visible structure of the central nervous system, a cellular structure of the retina. It usually appears as a rusty orange coloured ring, forming a boundary fence between the pupil and iris, hence the name Inner Pupillary Border (IPB). Medically and embryologically it is called the pigmented retinal epithelium and has 28,000 micro-nerve endings. The embryonic development and significance of the pigmented retinal epithelium is enlarged upon with practical insight for iridologists in the co-authored book *Embryology & Iridology* by Lo Rito & Andrews, published in May 2004.

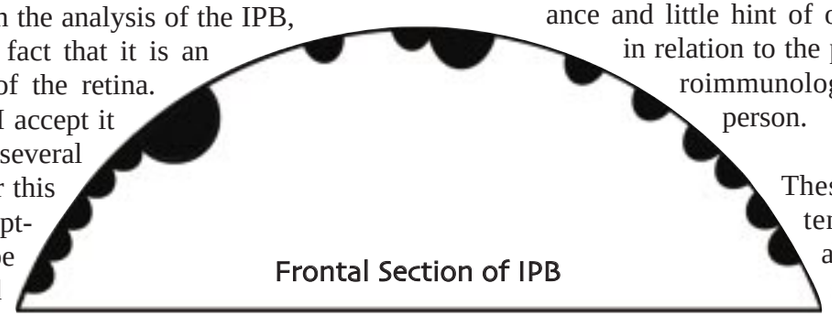
Many of us know about the IPB from basic iridology training as the "pupillary ruff" or "assimilation ring", but we may know little of the depth of information it can convey on a physical, genetic and psychological level. I will contest that much of the future of Iridology is in the analysis of the IPB, due to the fact that it is an extension of the retina. Although, I accept it may take several decades for this to be accepted, it will be embraced by the medical professions as a method of analysis in its own context without the iridology. With this in mind, we must challenge ourselves to begin the expansion of our studies with the Inner Pupillary Border to pre-empt this possibility, in order for us as iridological professionals to have a very solid foundation with which to grow and conclude scientific research in this area."

Accurate analysis of the Inner Pupillary Border will be the primary feature of Iridology to be integrated into medical thinking & practice

Frontal Section of IPB

When we examine the integrity of the Inner Pupillary Border on either a physical or emotional level then we really need to look at the frontal section of the IPB in both eyes. The frontal section covers the zone from 340º through to 40º.

If this frontal section of the IPB is intact and uniform in its appearance with no deviation of the iris edge, then we are usually looking at an individual with excellent reserves of energy, emotional balance, endocrine balance and little hint of overactivity in relation to the psychoneuroimmunology of that person.



Frontal Section of IPB

These people tend to be able to transcend their

problems and find an even path to the wisdom to be found within a concern.

However, a patient with a frontal section of the IPB with huge deviations of structure will be faced with more difficult challenges. The IPB could have localised introflession or expansion of the iris or pupil edge, in addition to irregularity of the endothelium due to partial atrophy, complete atrophy of the section, localised hypertrophy, solitary or multiple morphologies and pigments.

The patient with lack of uniformity in this section has difficulty resolving or even acknowledging any problem. They often face an arduous task or must trek down a seemingly unending and torturous path to face these conflicts and worries.

Psychosomatic influence is higher in these patients and we can be faced with complex alterations of the psychoneuroimmunological dynamics. With the IPB structure altered in this frontal section we have less resistance to emotional and physical episodes.

When the IPB is uniform and of a regular appearance, then we have resistance in abundance and less emotional conflict that can weigh us down.

Atrophy

A complete atrophy of the IPB is statistically the IPB diameter that is less frequently observed. However, it is not an out-and-out rarity. The practitioner will encounter it on a regular basis.

Hormonal interpretations of the atrophic IPB are succinct. They include:

- Hyperadrenal syndromes
- Immuno depression due to chronically elevated cortisol levels

We should also note that I have found in 90% of children under 15 years with an atrophic IPB to be of a nervous disposition and suffer from a severe lack of self-esteem.

Partial Atrophy

With a partial atrophy some of the IPB is atrophic or missing, whilst the remainder of the IPB is normal, hypertrophic or hypotrophic. In reality this can be termed a Mixed Border.

We are looking at a tendency to poor adaptation to stress, which becomes immunodepression at a cellular level. We have disturbed Melatonin levels and pineal gland function. It can often be seen in patients with a partially atrophic IPB that they have a tendency to SAD and drastic jet lag recovery. Erratic sleep can be a big health concern and many individuals have a pronounced need for foods rich in the amino acid called Tryptophan, which is a precursor for serotonin and melatonin production in the brain and intestines.

From research partial atrophy is frequently observed in:

- Uterine fibroids
- Polycystic Ovary Syndrome (PCOS research revealed an incidence of 78%, AIRJ Vol 5, 2005)

- Endometriosis
- Impaired hepatic hormonal clearance
- Hypothyroidism
- Hypoglycaemia in 823 out of 1500 cases
- Pituitary microadenoma in 22/34 cases

Clinical experience has warranted the need to check the blood pressure of the patient with this type of IPB, more than any other types.

In summary, with a partial atrophy of the IPB the practitioner should first begin the investigations into any possible endocrine-heavy medical history.

Hypertrophy

With the classification of the Inner Pupillary Border, as documented by Dr Vincenzo Di Spazio, we have a diameter of over 280 microns in thickness.

With the IPB hypertrophy we are looking at a tendency to overactivity of the physical and emotional bodies. The Hypothalamic Axis can be considered of prime importance here. Allergies and autoimmune conditions such as Rheumatoid arthritis, Grave's disease - hyperthyroidism, Vitiligo, Systemic Lupus - SLE, Scleroderma, and Autoimmune Diabetes are all possible conditions you will observe with hypertrophy of the IPB. Prolactin influence can be suspected in many of these conditions.

Hyperprolactinaemia is often integral to the development of autoimmunity and hypertrophy of the IPB, even if only sectional, can be indicative.

Continuing with the immune theme, we can observe that individuals with IPB hypertrophy can also have erratic sleep patterns leading to immune dysfunction, plus I have observed medical histories with incidence of splenomegaly, post-streptococcal syndromes or appendicitis. We can also see elevations in systemic acidity or uric acid levels resulting in any of the following conditions - duodenal or gastric ulcer, cardiac irritation by uric acid leading to tachycardia, anxiety or hypertension, polyarthritis, gout or eczema (particularly in childhood).

From the hormonal perspective, due to the influence on the hypothalamic-pituitary-adrenal axis (HPA) in women, we could witness a history of Dysmenorrhoea.

Cervical dysplasia patients will cover all spectrums of constitutional types, but with the diameter of the Inner Pupillary Border we find that the Hypertrophic IPB is the most frequently observed in 37 out of 52 cervical dysplasia cases.

Nutritional considerations with hypertrophy of the IPB include:

- Zinc
- Chromium
- Manganese
- Germanium
- Iron

Psychologically, individuals with such a structure of the IPB tend to be easily irritated and may suppress anger to a very deep level. This will dictate a slow, steady step-by-step (*scalino dopo scalino*) approach to gain trust and give the non-judgemental

encouragement required in order to release deeply entrenched anger.

Other traits of this diameter of IPB include inherent self-confidence, problems with memory and optimism.

Neurolappen – Nerve Rags

Sectional hypertrophy of the IPB is often called nerve rags or from the German, neurolappen. Schnabel was the first iridologist to document this. We have swollen singular globules that encroach over the pupillary lumen. They indicate nervous sensitivities with general anxiety and tension, depression (including Bipolar Depression) and insomnia.

A primary emotional issue for individuals is all factors concerned with trust. Some diverticulitis, intestinal polyps and varicose vein patients also have this IPB sign in various locations around the circumference.

Alterations with the gastrointestinal polypeptide secretions, such as VIP, Substance P or enkephalin can be present.

David Pesek's observations in the USA have linked this sign to Diabetes mellitus in some cases. This can link to the experience of depression, as both Diabetes and hypoglycaemia can trigger the development of depressive symptoms. Most patients with depression I have consulted with have a tendency to erratic or low blood sugar levels. This knowledge has only become apparent to the patient after iridology examination. Previous to this they were unaware.

Pigment Dispersion Syndrome

Pigment dispersion syndrome is a new documented sign in iris analysis. The pigment in question is not generated in the iris. It probably is not genetic either. From research to date the main conclusion is that it derives from an embryonic origin. It is an embryological defect as the Inner Pupillary Border forms. This can occur at the third week, due to a maternal deficiency of vitamin C and other key nutrients at this crucial developmental stage.

The segments of pigment congregate around the edge of the inner pupillary/iris margin apparent in the pupillary zone usually in one or two concentrated masses. It has only been possible to identify these manifestations due to technological advances in iris microscopes and digital imaging. These two areas have been fusioned by Iris Supplies in Australia.

The Pigment Dispersion Syndrome can also be present apparently floating in the pupillary lumen, although it is in fact a static phenomenon.

The dispersed pigments are always the same colourations as the patient's Inner Pupillary Border.

To date, since the studies began in August 2004, there has been no case of pigment dispersion syndrome with atrophic IPBs.

Another possible explanation for the pigment dispersion syndrome is the neuroendocrine perspective. Patients often have a

Extract from *Embryology & Iridology*
by Lo Rito & Andrews, 2005

Organogenesis is the second period where the rudiments of the primary organs develop and this begins at the fourth week and extends until the eighth week in gestation. It is interesting to note that both the pupil and pineal gland develop in the seventh week, where they are neurally connected. Also the iris begins the process of settlement of pigmentation, at approximately 52 days in utero, according to Tsiaris, both our irises are then heavily pigmented.

The third period is termed Differentiation, as each of the primitive organs turn into partially or even fully active organs. Differentiation starts at the end of the third month in gestation. During this time the retinae, optic nerve, anterior rim of the optic cup mature and the vitreous, the lens and structures of the angle and periocular mesenchyme develop.

In the fourth week the cells of the superotemporal wall of the optic vesicle that have not invaginated, acquire pigmentation and give rise to the pigmented retinal epithelium, which develops into what we know as the Inner Pupillary Border.

Lack of contact between the surface ectoderm and the optic vesicle prevents the development of the retina at this stage. It will then form a layer akin to pigmented retinal epithelium. The IPB and the retina have the ability to trade places at this stage of development and become each other, which is a rare event, but this does happen.

Pigmented cells termed melanosomes appear in the 5th week for the retinae and irides. Also the hypothalamus appears in the diencephalon, by the sixth week of development the limbic system is in place.

In the sixth week we have an incipient differentiation of the IPB, and the embryonic fissure closes by the beginning of the seventh week. By the end of this mini-process the IPB has formed a layer, 1 cell thick, with cuboidal cells.

In the seventh week the anterior epithelium fibres attach to the primary lens fibres.

The most important development occurs in the seventh week in the form of the migration of the secondary mesenchyme, which results from a previous migration of neural crest cells in to the area around the optic vesicle. The secondary mesenchymal cells migrate anteriorly and inward in three distinct waves. The most important from our perspective is the third wave that migrates between the corneal endothelium and the lens to form the stroma of the iris. Although, most recently Tripathi & Tripathi have claimed that the first wave forms the corneal endothelium and it is the second wave which forms the primitive iris.

Still in the seventh week it is stimulating to learn that the sclera begins to form as a condensation in the anterior periocular mesenchyme, which is induced by the pigmented retinal epithelium (IPB). The sclera is the end point of the dura mater, which is vitally important to know from a Cranio-Sacral perspective.

In the eighth week the pigmented retinal epithelium matures. The melanosomes involved within this process will continue flooding the ocular structure until the 27th week of development, yet the pigmented retinal epithelium is developed. That is until extrauterine life has its influence on the Central Nervous System.

At this stage the optic nerve has 34,000 growth cones and 2.67 million axons. In both optic nerves, axons have already reached the brain and are establishing a rudimentary chiasm. Also macrophages with relatively few cytoplasmic organelles are present in the meningeal layers.

Vitamin C seems to regulate the viscosity of the optic structures at this time, including the IPB.

disturbance of the hypothalamus and subsequent psychoneuroendocrinoimmunological pathways, for example in cases of autoimmune thyroid disease, splenomegaly, and breast carcinoma or extreme menopausal symptoms.

The S Sign

This sign looks like a letter “S”, turned on its side, which stands out from how the rest of the IPB appears. The “S” shape can be a little distorted or inflamed at times. It is a solitary, usually unilateral sign. They tend to occur in the frontal aspect of the IPB. Though they can appear infrequently anywhere around the IPB.

Their location in the frontal aspect of the IPB is not without foundation, as the S sign relates to the function of the hypothalamus and in particular the subsequent functions of the anterior pituitary gland, especially prolactin release. Prolactin is released by the anterior pituitary gland and triggered by the hypothalamus.

Research in recent years with pituitary and other endocrine out-patients, has helped to determine the meaning of the S sign, and also helped to accurately map the new embryological topography for both the hypothalamus and the pituitary gland.

Many patients with the S sign have a Prolactinoma. Prolactinoma account for 50% of all pituitary tumours. They are benign and tend to be smaller in females, because they are identified earlier due to absent or irregular periods. The S sign can also show a prolactinoma in the family or elevated levels of prolactin, which could be hyperprolactinaemia. Prolactin has a far reaching influence on many different systems of the body, which is important to homeostasis.

Elevated levels of prolactin can cause the following symptoms:

- Amenorrhoea or oligomenorrhoea
- Anxiety in both sexes (compromise of the HPA axis)
- Subfertility in both men and women
- Reduced resistance to infection, especially respiratory infection
- Lactation (early galactorrhoea in women and late galactorrhoea in men)
- Impotence in men
- Lethargy
- Reduced libido
- Oedema
- Hypoglycaemia – low blood sugar
- Hormonal assay of prolactin above 600 µ/ls in females and above 450 µ/ls in males

The S sign can relate to other pituitary problems, the more distinct and pronounced it is the greater the tendency to prolactin disturbances. The more distorted the sign, the greater the tendency to extreme menopausal or pre-menstrual symptoms a woman may experience. There is reduced potential of adaptability to big hormonal changes such as puberty, taking the contraceptive pill, injection of contraceptives, hysterectomy, pregnancy or the menopause.

The S sign is also observed in some cases of micro adenoma of the secretory cells of the anterior pituitary, which can cause tremendous headaches, exhaustion and visual disturbances. The visual disturbances and headaches are caused by compression of the tumour, which can cause a deficit in other hypothalamic or pituitary hormones.

Basically, on the physical level with the evidence of the S sign we are looking at an enhanced tendency to endocrine imbalance. Aspects of this work in iridology have been presented to endocrinologists and pituitary-patient groups in several countries.

The prevalent psycho-emotional dynamics that have formed from the ongoing research with the out-patients, with an S sign present on the IPB are the following:

- Unresolved anger towards one parent
- Issues of in/dependence
- Hyper self-critical
- Confused thoughts

These underlying emotional constraints have to be constructively addressed and resolved for any treatment plan to be successful.

Globular Sign

A globular sign is similar to a pearl in structure, except it has a much more swollen and heavy appearance. It can be a solitary sign or occupy up to 30 degrees of the IPB. Again we have an IPB sign relating to intestinal function. It is unilateral.

Dysbiosis is probable - please refer to a urine dysbiosis test. When the globular shape appears at 360 degrees, then the practitioner needs to be aware of the vast influence the hypothalamus has on the intestinal tract. The hypothalamus interacts with the intestines to produce serotonin and other neurotransmitters and the hypothalamus also controls the peristaltic action.

Other conditions with a strong association with this sign are mental fatigue leading to depression, gastric ulcers and the need for the pre-cursor to Vitamin A - beta-carotene, selenium, manganese and zinc. In the case of Vitamin A check the sclera for Bitot markings.

Globular morphology of the IPB at 140º or 215º along the ventral IPB can often be observed in cervical dysplasia.

From a naturopathic perspective, the Globular sign is linked to systemic toxicity, but from the above acknowledgements we can see how that situation would arise in a patient.

Squared Shape

The Squared shaped is a lot shorter and more box-like in form than the rectangular wall. Usually located frontally and ventrally. Indicates a primary tendency to thyroid dysfunction.

We have concerns with verbal expression and conflicts with the father figure. The calcium-magnesium balance has special emphasis with this morphology. Any imbalance in this ratio could lead to symptoms of muscular tension, palpitations, paraesthesia, cramps, abdominal colic, IBS or emotional sensitivity.

Sensitivity to noise and a tendency to be introverted can also be apparent with the squared shape of IPB.

If the squares are clearly and equally divided then observe for Parathyroid functional changes. We have four parathyroid glands, which help to balance the body's calcium levels.

Endocrine Topography along the IPB for both Rx & Lx irides

Hypothalamus	358º to 2º
Pituitary gland	357º to 3º
Pineal gland	360º
Thyroid gland	51º to 58º & 302º to 309º
Pancreas	99º to 104º & 259º to 264º
Endocrine Liver	85º to 90º & 270º to 275º
Adrenals	110º to 115º & 250º to 255º
Kidneys (Renal endocrinology)	122º to 127º & 238º to 243º

Diffuse gastrointestinal endocrine system is throughout the IPB circumference

Testes/Ovary/Cervix	142º to 148º & 218º to 224º
Uterus	129º to 134º, 142º, 229º to 334º & 218º
Prostate gland	150º to 151º & 210º to 211º

Pupillary Dynamics in Adverse Vaccine Reaction

From 110 cases of 42 adults, 23 adolescents and 45 infants

Anisocoria	53%
Mydriasis	25%
Miosis	2%
Normal	3%
Hippus	17%

Differentiation of Lacunae in Endocrine Based Iridology

A lacuna translates as meaning a hole within the surface of the iris. The terminology derives from the Ancient Greek. In Iridology, we are looking at what appears to be a hole or opening in the surface iris fibre structure. These openings always have a defined border of some type. There are many different types of lacunae and they carry varied information on both the physical and psycho-emotional levels.

All lacunae are genetic markers. When we observe a lacuna in the iris then we are assessing the genetic and family history of a condition for that individual. We can also assess the risk of evolution or involution for that particular genetic tendency or concern in the patient we have before us.

As lacunae are inborn, they do not have the capacity to alter throughout our lifespan. A lacuna is embryologically pre-programmed to be how it is and what it is. There is no scientific data that illustrates changes to, or, the disappearance of the lacuna from the iris surface. A lacuna is a static formation showing the potential that we may or may not have for reaction or resistance in the organ or gland area concerned.

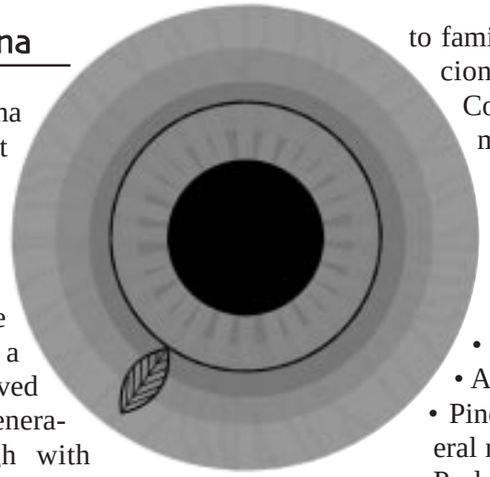
Optical illusions of change may have taken place due to actual alterations in the pupillary dynamics, ocular pressure and also the use of photographic images for analysis. This again illustrates the need for examination of the frontal eye through a microscope with a system of fibre optic lighting capabilities.

Being a genetically determined structure the lacuna brings a focus to the preventative approach in Iridology and general medicine. For example, if a patient has a general lacuna in the topography for the heart @15' in the left iris and 45' in the right or left iris, then this individual will have cardiac disease in the family history.

The lacuna creates the potential for a functional disruption at a cellular level. There is a greater distance for cellular communication to be completely cohesive, although our bodies always strive to compensate for any genetic discrepancies. This is why we have prevalence for hormonal glands to be marked in the iris by a lacuna. We need to remind ourselves that the intestines, heart and kidneys have an endocrine responsibility and interchange. The endocrine communication can be impaired, especially during the time of gestation. This endocrine impairment can lead to cellular fatigue leading to difficulties with functional coordination. The lacuna shows an implicit need for functional exertion, or a lowered vitality of the organ or anatomical area in question.

We can conclude, according to the research to date that a lacuna is a genetic footprint within the iris.

Closed Lacuna



Closed Lacuna

A closed lacuna has borders that fully converge. Research has revealed that closed lacunae indicate the likelihood of a condition resolved in previous generations. Although with stress, functional disturbance at a cellular level is possible. Dark signs in a closed lacuna indicate low resistance. Many closed lacunae are present in the Polyglandular constitutional subtype. In Polyglandular types endocrine tendencies are to the fore. Closed lacunae are usually attached to the external border of the collarette and are typical genetic markers for previous endocrine problems in past generations. Closed lacunae can appear in reflexes for the pancreas, thymus, thyroid, pituitary, hypothalamus, pineal or ovary.

Asparagus Lacuna

This lacuna is so-called due to its characteristic asparagus tip appearance. The tip points away from the collarette into the ciliary zone. The lacuna attaches to or appears out of the external border of the collarette. In rare cases it begins at the IPB. The asparagus lacuna is a solitary, unilateral sign, which can be found in both the frontal and ventral iris. It's presence can necessitate the need for rigorous questioning in regard to family medical history, if further suspicions are aroused individually, then Computerised Tomography (CT scan) may be necessary.

A frontal asparagus lacuna can indicate the following depending on location:

- Nasal polyps
- Adenoma of the pituitary gland
- Pinealoma (check for unreactive bilateral mydriasis)
- Prolactinoma (check for S sign on the IPB)
- Memory loss or concentration difficulties
- Hypothalamic alterations (such as temperature changes, extreme menopausal hot flushes, recurrent fevers or night sweats)
- Hemiplegic Migraines

When located ventrally then we are looking for predisposition to:

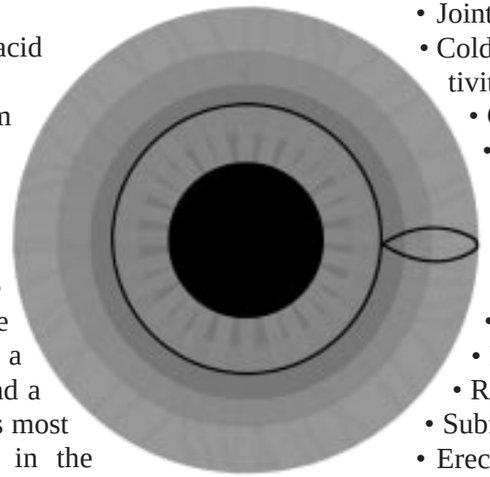
- Salpingitis
- Carcinoma, polyposis, myeloma or cysts in the uterus (fibroids), ovary or cervix (cervical dysplasia) in females
- Carcinoma or inflammatory concerns with the prostate, testes or epididymis in males
- Testicular cysts

The asparagus lacuna is a relatively infrequent iris sign.

Nutritional requirements for the asparagus lacuna are:

- Potassium
- Essential fatty acids
- Selenium
- Germanium
- Phosphoric acid
- Vanadium
- Molybdenum

Thyroxine Lacuna



Thyroxine Lacuna

This topolabile sign is a large lacuna with a rounded end and a small base. It is most notably found in the topography for the thyroid attached to the collarette @ 15' & 45" in the right iris and at 45' in the left iris. With this particular lacuna we are looking at a genetic tendency to hypothyroidism or underactive thyroid function. Thyroxine, TSH and TRH levels are diminished and out of ratio with each other.

As a practitioner we need to be aware of the influence the hypothalamus can have on the thyroid functions. Basal body temperature testing over the course of a month and/or blood profiles can be suggested if any of the following symptoms are persistent:

- Weight gain
- Fatigue
- Muscular aches without exertion
- Mood swings
- Depression
- Dry, puffy and scaly skin
- Two thirds of the eyebrow missing
- Slow pulse rate
- Heavy periods - Menorrhagia
- Anaemia
- Joint pains
- Cold extremities and general cold sensitivity
- Constipation
- Apathy
- Loss of appetite
- Deepening or hoarseness of the voice
- Goitre
- Dry brittle nails
- Increased urinary excretion of calcium
- Decreased red blood cell mass
- Reduced libido
- Subfertility
- Erectile dysfunction
- Poor metabolism of lipids
- Carpal Tunnel Syndrome
- Snoring
- Sinus bradycardia
- Achlorhydria
- Salt cravings
- Slow-relaxing reflexes
- Short-term memory loss
- Flat glucose tolerance curve with delayed insulin response

Hyperthyroidism is usually evidenced with the presence of a crypt and/or radical indentation of the collarette in the same topographies.

Referral to an endocrinologist could be warranted if the practitioner is not confident or

experienced with hypothyroidism. An excellent text for both practitioner and patient alike is *Why do I feel so tired? Is your thyroid making you ill?* by Martin Budd (Thorsons).

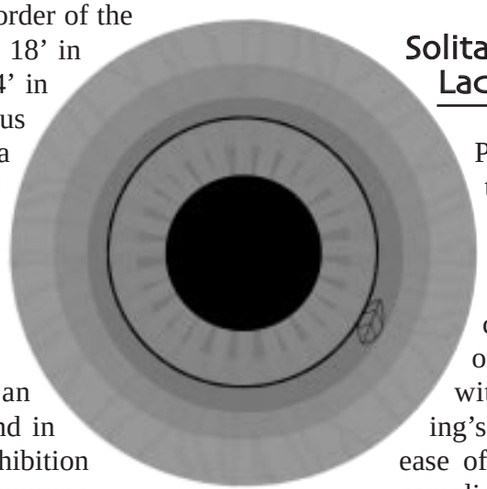
Circular Lacuna

A small encapsulated circle-shaped lacuna normally located in the posterior pituitary topography, always attached to the frontal collarette. In addition to the pituitary, we have an interaction with the adrenal medulla and ovaries. A circular lacuna is often present in those with Diabetes insipidus. Also hormonally triggered migraine. A circular lacuna predisposes to pale skin, hypertension, oedema (especially pre-menstrually), tachycardia and chest pains and sexual concerns, such as decreases in libido due to anxiety.

Thymus Lacuna

Located in the Thymus gland topography attached to the external border of the collarette at either 16’ to 18’ in the right iris or 42’ to 44’ in the left iris. The Thymus lacuna is unilateral. It is a very distinctive closed structure with a flattened edge or edges. It usually contains a leaf or stairstep structure.

It can form part of an Immune Axis and is found in those individuals with inhibition of the cell-mediated immune responses, susceptibility to infection due to poor infant nutrition or lack of breastfeeding as a baby, autoimmune Myasthenia gravis, possible tumour growth in the thymus gland or a general diminished T-cell count. Check for accompanying hypertrophy of the Inner Pupillary Border. If this is present then it compounds the immune situation.



Thymus Lacuna

Daisy Petal Lacuna

This is Angerer’s rare Milkwort lacuna. Three crypts or small lacunae congregate adjacently on the collarette edge. The three lacunae are akin to daisy petals. This sign is usually located @ 30’ and attests to adrenal gland insufficiency, inflammatory intestinal problems and enzymatic compromises. The educated and experienced naturopathic practitioner can easily see how all three of these conditions are related.

Some individuals with tumours of the adrenal cortex or kidney have the Daisy petal lacuna.

Solitary Collarette Lacuna

Please pay close attention to the solitary collarette lacuna as the expectations for complications in a particular health concern can spiral depending on location. For example, with Appendicitis, Cushing’s disease or Addison’s disease of the adrenals. Numerous complicated endocrine problems can be lineated by a solitary lacuna. These complications can be exacerbated by the presence of an accompanying pigmented granulation.

Lacunae located externally on the collarette relate to endocrine functions and glands.

Lacunae located internally to the collarette indicate digestive, embryological topography and deep lymphatic concerns.

Double Lacunae

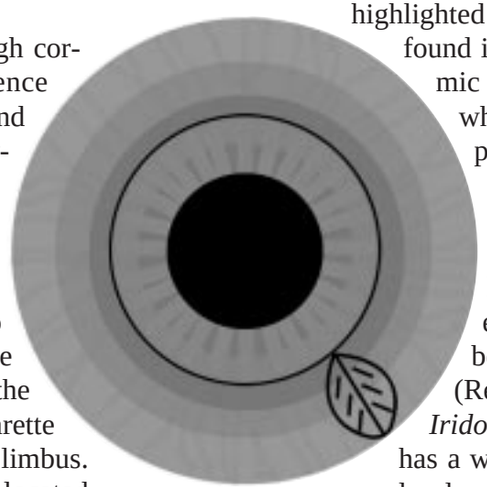
This is really a formation of two lacuna attached to each other. They will be closed and of similar size and integrity. They are usually attached to the collarette and I have only ever really observed them in the lower 180º of the iris.

The sign indicates a tendency and genetic history to benign adenoma and cystic developments, primarily with hypofunction of the adrenal cortex, prostate gland, ovaries and even the renal system.

Research has shown a high correlation of 70% incidence with Double Lacunae and medically confirmed polycystic kidneys.

Gigantic Lacuna

This lacuna really lives up to its name – it is a large lacuna usually covering the distance between the collarette border and almost the iris limbus. More often than not it is located with its tip in any of the four classical topographies for the pancreas in either iris.



Gigantic Lacuna

According to Schnabel and subsequently documented by Angerer, Markgraf, Jarosyck, Rizzi, Ivaldi, Di Spazio, Aleiev, Gazzola, Deck, Arcella, Ypma & Lindemann, the Gigantic lacuna shows a family history of and tendency to Diabetes mellitus. I have seen nothing clinically to disagree with these authorities.

According to Birello & Lo Rito the Gigantic Lacuna can also relate to faulty metabolism of carbohydrates.

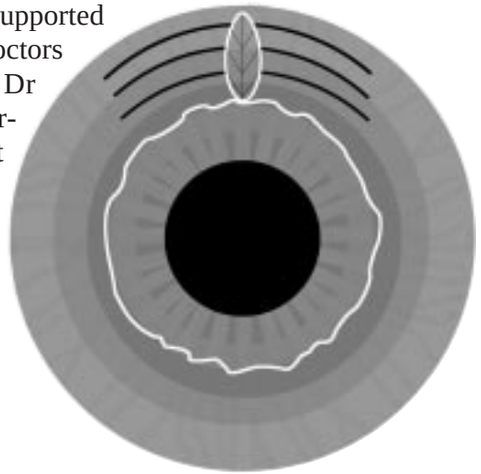
Leaf Lacuna

Many years of research and experience has illustrated to me that the Leaf lacuna relates to the function of the endocrine system and a tendency to hormonal imbalance, with particular emphasis on the Hypothalamus-Pituitary–Adrenal (HPA) axis. The psychoneuroimmunological involvement is highlighted with a Leaf Lacuna when found in the classical hypothalamic or pituitary topographies, when accompanied by deep pigments.

Leaf lacunae are attached to the collarette. The collarette is where signs for endocrine pathologies will be found in 93% of cases (Refer to *Endocrinology & Iridology*). The Leaf Lacuna has a well-defined border, usually closed, medium-sized with an

intricately veined structure, similar to that of a leaf.

I would suggest to you that when a Leaf Lacuna is observed then our attention should be drawn to a particular endocrine gland. This assertion is supported by the late and great Doctors Rudolf Schnabel and Dr Anton Markgraf from Germany, plus in more recent times by Dr Vincenzo Di Spazio in Italy.



Leaf Lacuna

Leaf lacunae can be located in the following topographies:

- Hypothalamus
- Anterior Pituitary
- Pancreas
- Thyroid
- Thymus gland
- Ovary
- Testes
- Pineal gland
- Adrenal cortex
- Breasts (Premenstrual Mastalgia or hormonally dependent tumour formation)

When Leaf lacuna are observed with a significant hypertrophy of the IPB diameter, then we could be looking at the possibility of autoimmune and other disease manifestations:

- Goodpasture's syndrome
- Systemic Lupus Erythrematosis
- Scleroderma
- Hashimoto's disease
- Urticaria (with diffuse iris pigment)
- Myasthenia gravis
- Autoimmune Diabetes
- Polycystic Ovary Syndrome
- Subfertility in both males or females

The Endocrine Collarette

The collarette is a reliable indicator of endocrine tendencies. It can demonstrate the degree to which the tendency could become apparent for that individual. We need to examine three levels of interpretation with the collarette in order to ascertain this information. These are as follows:

- Endocrine Topography on the external border of the collarette
- Embryological Topography on the internal border of the collarette
- Differentiation of the Collarette Structures

Endocrine Topography

Looking at 1,122 medically diagnosed endocrine patients; it was found that the signs for the endocrine pathologies were actually attached to the external border of the collarette in 93% of cases.

These diseases included dysfunctions of the pancreas, anterior and posterior pituitary, pineal gland, thymus gland (although this is more immunological), adrenals, endocrine liver, ovary, testes, hypothalamus and, surprisingly, for many, the thyroid gland.

The iris signs prominently included the following:

- Leaf Lacuna
- Rhomboid Lacuna
- Solitary Lacuna
- Circular Lacuna
- Gigantic Lacuna
- Thymus Lacuna
- Thyroxine Lacuna
- Double Lacuna
- Negative Lacuna
- Lacuna with pigment
- Solitary orange/brown or brown pigment
- Indentation of the Collarette
- Crypt and Pigment
- Crypt
- Transversal with local indentation of the collarette
- Radial Furrow terminating at the collarette

Embryological Endocrine Topography

In the embryological research spanning from 1999 to 2003 it was found that the mean accuracy on all endocrine diseases was 85.69% in 555 patients across the board of males and females. These signs are located on the internal border of the collarette.

The glands we could chart included:

- Hypothalamus
- Pituitary
- Pineal
- Thyroid
- Thymus
- Breasts
- Pancreas
- Ovary/Testes
- Uterus
- Adrenals
- Kidneys

Differentiation of Collarette Structures

Restricted or Contracted Collarette

- Hyperadrenal syndromes
- Hypoactivity of Pineal-Hypothalamus-Thymus axis
- Impaired hormonal clearance from the liver
- Tendency to secondary amenorrhoea
- Predominance of maternal hormonal inheritance
- Central heterochromia with restricted collarette in CCK imbalance

Distended Collarette

- Gastrointestinal endocrinological disturbances
- Thyroid gland
- Painful periods
- Predominance of paternal hormonal inheritance
- Secretin - distended and thinning collarette structure – either a gross or local distension are possible

A distended collarette reveals the pupillary sphincter. The pupillary sphincter is a red herring when it comes down to diffuse endocrine gastric secretions, the collarette should be the focus.

Ventral Distension

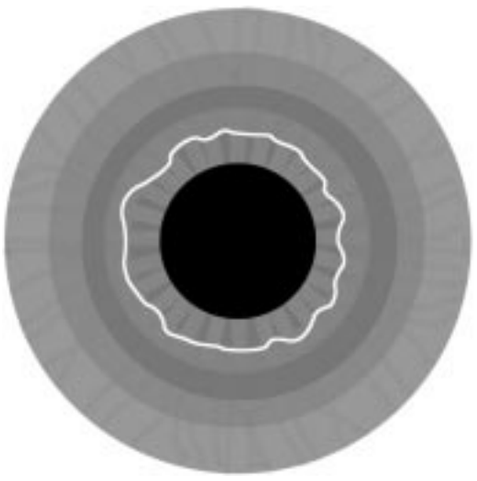
- In 2% of endometriosis cases
- 30% of Varicocele cases
- Benign Prostatic Hyperplasia (BPH)

Protuberance

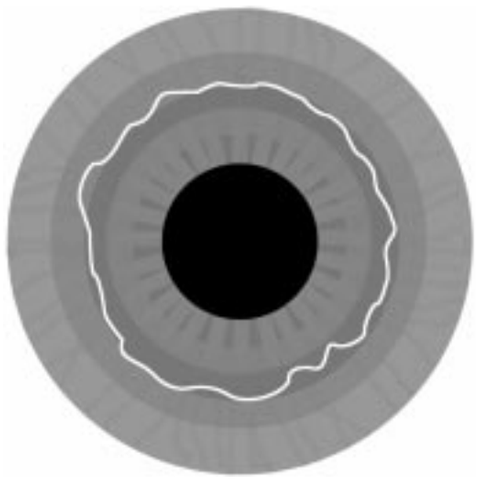
When the protuberance is accompanied with an encapsulated lacuna at 40’ in the right iris, this relates to Diabetes mellitus.

Local Indentation of the Collarette

- PNEI factors



Restricted Collarette



Distended Collarette

- Often in autoimmune diseases with a hormonal dynamic, such as SLE or RA
- When local indentation appears frontally anticipate factors with birth trauma or alterations with hypothalamus, pineal or anterior pituitary
- Local indentation of the collarette at 345º in the right iris and 15º in the left iris with gastrin disturbances
- Indentation of the collarette at 40’ in the right iris (gall bladder & pancreas differentiation) with pancreatic polypeptide secretion changes

Frontal Indentation

When accompanied with pupillary mydriasis and adrenal gland signs, we need to be aware of tendency to postnatal depression and elevated prolactin.

Hypertrophic Thickened Collarette

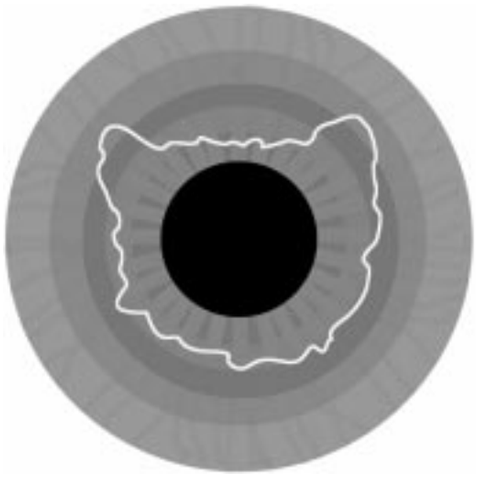
- Thickened or hypertrophic collarette structure between 220º to 320º in the left iris only – we can relate this to the classical and embryological topography of the ileum – in alterations of enkephalin secretion
- A partial or localised thickening of the collarette structure in the right iris at 90º is often apparent in autoimmune Hashimoto’s disease of the thyroid

Thin or Atrophic Collarette

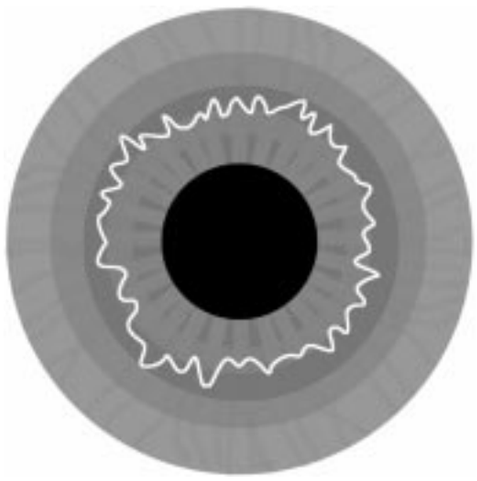
- Either a local interruption or complete atrophy with disruption of gastrointestinal polypeptide hormone YY
- Very susceptible to adrenal stress

Zig-Zag Collarette

- Hypertrophic Collarette (usually misshapen) with zig-zag structure for disturbances of neurotensin balance
- Normal diameter of collarette with zig-zag adjacent to pancreas may illustrate gastrointestinal endocrine alterations of pancreatic polypeptide
- Substance P alterations



Frontal Indentation



Zig-Zag Collarette

Partial Zig-Zag Collarette

- Partial zig-zag of the collarette over classical spleen topography at 20' in left iris in CCK imbalance
- Whitened zig-zag collarette. VIP takes precedence in any consideration of the zig-zag collarette

Double Collarette

Susceptibility to compromise of the PNEI pathways.

Squared Collarette

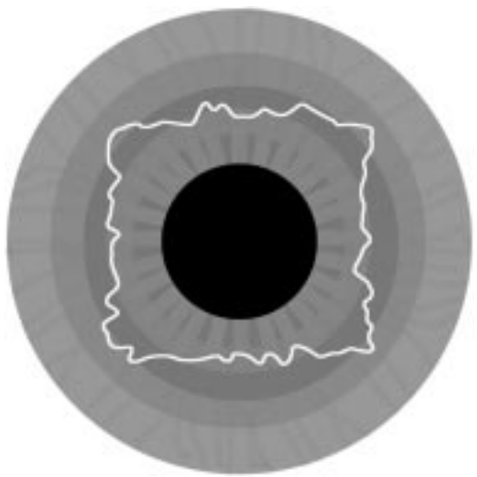
- Alterations of Glucose-dependent insulinotrophic peptide (GIP) secretions
- Alterations in the Hypothalamic-Pituitary-Adrenal Axis (HPA)
- General blood sugar disturbances
- Subfertility

Misshapen Collarette

- General intestinal compromise

Meerschaum Collarette

- Alterations of vasoactive intestinal peptide (VIP)
- Alterations of cholecsytokinenin (CCK)
- Magnesium deficiency integral to adrenal and blood sugar regulation



Squared Collarette

A Neuroendocrine Appraisal of the Pineal Gland as Reflected Through Iridology

The Pineal is a small gland with great importance in regards to homeostatic regulation of the immune and associated body systems - physiologically and energetically. To avoid confusion, the terms of *Pineal* and *Epiphysis* are both used within this chapter, as *Pineal* is used mainly in the UK and the USA and the term *Epiphysis* is used extensively in many European countries. As this book and also courses in this subject will be presented throughout these countries, it is only fair that I use both names here.

It is perhaps little known that the Pineal gland, located as we know, at the roof of the posterior portion of the third ventricle of the brain, has access to a rich supply of blood and its hormonal secretions affect virtually every organ system in the body.

The Pineal is innervated by the Sympathetic Nervous System, via the superior cervical ganglion. This innervation is essential for the rhythmic metabolism of indoleamines such as tryptophan, serotonin and their derivatives, as well as the Pineal's endocrine functions.

The Seat of the Soul

The Pineal gland, also known as the *Epiphysis cerebri*, or Epiphysis for short, was intuitively recognised by many ancient civilisations; even before its importance had been explored with today's science. The Epiphysis has been and is still generally, greatly underestimated, even completely dismissed by some people. In ancient Indian texts it is considered the location of "the third eye" or "Crown Chakra". In the fourth century Herophilus described the Epiphysis as the "sphincter of thought" and in the seventeenth century Rene Descartes referred to the Epiphysis as "The Seat of the Soul".

According to Peter Mandel, the pioneer of Colourpuncture, "all diseases begin in the endocrine system". Hormones are feelings and emotions in biochemical form made physical; they are the polarity between thought, emotion and physical response. The Pineal can be considered the hub of hormones and emotions; and in addition to the ancient texts, modern research and advances are proving that the humble Pineal is in fact the "regulator of regulators"; and far from being of no worth, its central influence can be *and* is profound.

There is now a great deal of scientific literature and even annual international symposia, on simply the actions and recent developments in our understanding of the Pineal. Russell Reiter presented a paper at the Third Stromboli Conference on Ageing and Cancer. He demonstrated the role of melatonin as a potent antioxidant and free radical scavenger. It was shown how melatonin helps to protect the body's energy system, which is critical for our survival.

Anatomy & Physiology

The Epiphysis or Pineal gland itself is a small body, weighing approximately 150mg, situated under the brain behind the third ventricle. It is 8-10 mm in length and four millimetres wide, has reddish brown colouring and is surrounded by a capsule. The suprachiasmatic nucleus (SCN) projects to the Epiphysis via hypothalamic connections to the brain stem and spinal cord. From there the nerve innervation is sympathetic to the superior cervical ganglion and Epiphysis itself.

The Pineal is connected to the brain by a multi-nerve-containing stalk. Many of these nerves terminate in the hypothalamus, which is located directly behind the Pineal. Hence, both the Hypothalamus and Pineal are paramount in Psychoneuroendocrinoimmunological (PNEI) interactions.

The Pineal draws its blood supply from the enveloping Pia Mater. The endothelial cells in the vasculature of the Pineal are fenestrated so the gland is separate from the blood-brain barrier. Which is very useful to be aware of for herbal medicine.

Light enters the eye through the iris and retina, the nerves relay a message via the SCN pathway to the Epiphysis, about the amount of light entering the eye, which influences the melatonin secretion. Environmental light stimulates Pineal activity, although absorption of light via the skin at the top of our head can also occur. We respond physiologically and psychologically to these reflexes.

Apart from melatonin, the Pineal contains noradrenaline, serotonin, peptides such as GnRH and TRH and also the neurotransmitter gamma amino butyric acid - GABA.

Melatonin Synthesis

Pinealocytes are specialised secretory cells controlled by the noradrenaline output from the adrenals. Melatonin is synthesised from the amino acid tryptophan, of which levels are greatest at night due to the absence of light. The secretion pattern of melatonin occurs upon exposure to darkness and the increased activity of serotonin-N-transferase. By the action of hydroxyindole-O-methyltransferase (HIOMT), N-acetylserotonin is converted to melatonin. Melatonin is then rapidly secreted into the vascular system and also the cerebrospinal fluid. Tissues such as the retina and the intestines have also been shown to synthesize melatonin. These two facets give rise to further possibilities from study of the IPB in regards to the intestinal immune system.

Not a single cell in the body can escape the influence of light striking and being absorbed by the eyes - hence we have the exciting prospects for Phototherapy and Iris phototherapy/Colour therapy. Melatonin has been shown to boost and modulate immunity, digestive functions (serotonin), the endocrine system, sleep patterns, plus reduce stress and limit oxidative stress such as the stimulation of brown (hard) fat production; which can induce premature ageing factors.

Melatonin levels fluctuate naturally during a 24-hour period. Through the influence of the Hypothalamus, melatonin co-ordinates the circadian and diurnal rhythms of numerous tissues. These 24-hour rhythms and levels of melatonin can be analysed accurately through functional saliva testing.

Recently, over a hundred bodily functions have been identified as having daily rhythms; thus modern science confirms traditional oriental medicine systems and therapies such as Acupuncture. Melatonin levels are highest at night, when it is dark and usually at their lowest point around noon. Serotonin levels are lowest at night, when melatonin levels are high. Thus, we can see how the Pineal can play its part in emotional depression and SAD - Seasonal Affective Disorder. Greater exposure to natural daylight on the skin and through the eyes seems to go a long way in remedying these problems.

Sleep Patterns & Melatonin

Sleep is fundamental for good health. Without good, balanced sleep patterns the susceptibility of our immune system, kidneys, liver, neurological functions, mental health and hormonal system can all be affected.

Patients with delayed sleep phase insomnia cannot sleep until the early hours of morning, and often end up sleeping through much of the day. This condition has been treated successfully with exposure to bright light in the early morning to induce phase advances of the clock. An evening dose of homeopathic Melatonin D30 at 11:00pm has been able to advance sleep time significantly. A combination of both methods - timed application of bright light in the morning and a dose of melatonin in the evening - seems to be one of the most effective therapies, together with morning exercise, for treating melatonin rhythm disturbances and sleep disturbances.

Melatonin has not only been shown to advance sleep time, but to increase sleep duration as well. It is also effective in reducing the symptoms of jet lag. One study examined the effectiveness of melatonin in treating the sleep disorders in 100 children, who had a wide variety of physical problems including blindness, mental retardation, autism, and central nervous system diseases. Melatonin therapy was found to benefit over 80% of these children, and was lauded as a “safe, inexpensive, and very effective treatment of sleep-wake cycle disorders.” In general, smaller does of melatonin appear to be just as effective as larger doses in inducing and sustaining sleep.

Balanced melatonin activity in the blood and nervous system helps to enhance both REM and slow-wave sleep patterns. Melatonin’s effect on body temperature may be one of the keys to enhance sleep. Body temperature follows a circadian rhythm, rising naturally during the day and falling at night. We only have a couple of degrees fluctuation day-to-day in the body’s temperature. The daily temperature variation in the human body is only minor, but research has revealed this minor change can have a huge effect on melatonin and sleep. In general, a falling body temperature induces sleep, while a rising body temperature provokes wakefulness. It has been demonstrated that an individual will fall asleep most quickly and stay asleep the longest when lights are

out, and the body temperature undergoes its most rapid decline.

The Role of Melatonin in Reproduction

Higher secretions during the hours of darkness add to Noradrenaline levels. The signal for this increased production of noradrenaline from the Adrenal medulla through the sympathetic nervous system arrives from the Pineal. This causes greater alertness and we have increased response to dangers, even when asleep. Daylight reduces both melatonin and noradrenaline. Melatonin can decrease both LH and GH productions and has been shown to inhibit the growth and development of the sexual organs before puberty, possibly by preventing synthesis or release of gonadotrophins. It is now generally recognised that reproductive and sexual physiology are under part influence of the Pineal.

A high level of melatonin is generally associated with short daylight hour days, which results in decreased gonadotrophin release and synthesis; whilst long days cause low melatonin levels resulting in increased sexual hormone production, and increased libido.

It has been postulated that one of the reasons why many children are experiencing precocious puberty in western countries is due to the stimulus of the Pineal through saturated levels of bright and intensive artificial lighting at home and school. It is also of interest to note that in women with normal menstrual cycles, evening melatonin levels are at a low during ovulation and peak during menstruation. Also in Hypothalamic amenorrhoea (absence of periods) abnormal elevations of melatonin for prolonged durations have been measured.

Consistently high levels of melatonin can suppress ovulation in women and sperm formulation in men. Both these situations can obviously lead to sub-fertility, which also brings in the endocrino-immunological perspective, and the possible and very probable advantages to be gained therapeutically from full spectrum light based therapies that can be absorbed through the skin or iris.

Melatonin's Role in Growth and other Hormonal Functions

We have seen how melatonin helps to maintain normal daily and seasonal hormone levels and it also oversees our growth and development from infancy through to adulthood. During pregnancy melatonin is transferred to the developing foetus through the placenta. Placental health is essential for this to occur fully, so tobacco, alcohol, calcium supplements and chemicals should be avoided during this time to ensure a healthy placenta. After the birth and when breastfeeding begins, there are high levels of melatonin present in the breast milk. This has a relaxing effect on the baby.

Melatonin levels reach their peak during childhood. During adolescence the melatonin levels drop, triggering the rise in other hormones. This gives the signals to the endocrine system to initiate the onset of puberty. A small lacuna is always present in the iris of a boy experiencing premature puberty.

As we grow older, the body's Melatonin levels continue to decrease with the steepest decline occurring from about fifty years of age onwards. By the age of sixty, the Pineal gland is producing half the amount of melatonin it did when we were twenty. With this drop in melatonin levels, the downward spiral known as ageing occurs because the Pineal gland - the ageing clock - breaks down. Oxidative stress occurs due to an increase in unchallenged free radicals in the system. Free radicals, especially the hydroxyl radical, can be extremely damaging to cells. Melatonin has both water and fat-soluble properties, making it one of the only known antioxidants in nature that can protect all parts of a cell. Since melatonin has the unique ability to navigate any body barrier with ease - including the blood-brain barrier and the placental barrier - it can protect virtually every cell in the body.

Recent evidence suggests that melatonin plays a critical role in free radical scavenging activity, preserving macromolecules such as DNA, protein, and lipid from oxidative damage. In fact, melatonin has been proven more powerful than both glutathione and mannitol in neutralising hydroxyl radicals and may protect cell membranes more effectively than vitamin E. Remarkably, it is five hundred times more efficient at protecting cells from radiation than dimethyl sulfoxide (DMSO).

The mitochondria in a living cell synthesize ATP, the driving energy fuel for the body. During this process, some oxygen-based free radicals are produced. These free radicals can cause great damage to the tissues. Melatonin with its strong anti oxidant properties acts as a scavenger and eliminates potentially dangerous free radicals. We require greater numbers of anti oxidant and free radical scavengers, as we age due to this susceptibility to oxidative stress.

Electromagnetic pollution, excessive radiation, tobacco exposure, high alcohol consumption, environmental pollutants, rancid oils, additives, hydrogenated oils, synthetic hormone exposure, pesticides and other agrichemicals, ultraviolet light exposure and saturated animal fats all add to the promotion of free radical activity.

Melatonin is considered to be a potent age reversing hormone, due to its versatile antioxidant activity and because it protects against environmental hazards.

The Heart & Melatonin

In addition to these factors it can help to prevent cancers and helps to maintain healthy cardiac function. A decrease in melatonin causes increased night-time sympathetic activity, which in turn appears to increase the risk for coronary heart disease. One study found that patients with coronary heart disease had nocturnal melatonin levels five times lower than in healthy controls. Investigators surmised that lower levels of melatonin might act to increase circulating catecholamines, which have been implicated in damage to blood vessel walls. Atherogenic uptake of LDL cholesterol is accelerated by these amines at high-risk densities.

The Immune System

The Pineal is involved within the immune system due to the far-reaching influence of melatonin levels during sleep; and the detrimental effect impaired sleep can have on the immune system, especially in relation to the number and responsiveness of macrophages, NK cells, neutrophils and T-cells.

NK cells, or Natural Killer Cells to give them their full name, are also known as large granular lymphocytes in the field of immunology and they have a role in anti viral activity and also the cessation of tumour formation. In fact they kill tumours and cells infected with a virus. Their lineage is uncertain and they express no specific membrane markers. Their mechanism of killing is similar to that of cytotoxic T cells. It has been well documented that disturbed sleep patterns can adversely influence the number and activity of NKCs. In fact NKCs are around 1200 to 1300% more active during our normal sleep cycles. Therefore we can see how correct synthesis of melatonin has been strongly linked to anti-cancer effects, particularly cancers that are hormonally dependent like certain types of breast cancer, for example.

Melatonin also exhibits a general stimulatory effect on immune system functions. One theory is that melatonin acts as an anti-stress hormone via the brain opioid system, with consequent increase in positive immune activity. Remember to check for the Stress Axis or an Immune Axis in the iris.

Further to this, some immunologists and endocrinologists conclude that T-cell derived cytokines are the major mediators of melatonin's immunological influence. Specific high affinity binding sites for 1251-melatonin have been discovered in T-helper-type 2 lymphocytes in the bone marrow and in various lymphoid tissues.

Multiple Sclerosis

Multiple sclerosis has also been linked to Pineal function. It has been found that when melatonin levels decline then the patient can experience an exacerbation of their symptoms and remissions occur in MS patients when melatonin levels are balanced and thus immune responses are.

In one study, 32 MS patients were randomly selected from patients consecutively admitted to a neurology service in a hospital for exacerbations of their symptoms. Nocturnal levels of melatonin and the activity of the Pineal gland were monitored over the course of each patient's illness. The study revealed a progressive decline in melatonin levels over the duration of the illness. Since patients with chronic progressive MS had a lower mean melatonin level compared to those with a relapsing-remitting course of the disease, an analysis of melatonin levels may be crucial for understanding the patho-physiology of MS and, specifically, the course of its progression.

With this information in mind, as iridologists we need to examine the iris for an Immune Axis in patients with suspected or diagnosed multiple sclerosis.

The Pineal - Our Own Internal Compass

The Pineal could well be our own internal compass. It has been found that the Pineal contains micro-magnetic crystals and around 20 to 30% of the Pineal cells (pinealocytes) are magnetically sensitive. This very real physiology makes the Pineal the primary magnetoreceptor in the human brain and it is extremely sensitive to external electromagnetic fields and pollution, plus geopathic stress. Electromagnetic fields can alter the secretion of melatonin. The Pineal and magnetite bearing tissues in the brain directly react to and are influenced by the Schumann Resonance; which is generated by electrical activity in the earth's own magnetic field and ionosphere.

The Schumann Resonance oscillations propagate for long distances and readily penetrate through the walls of buildings and into the human body. This may sound like science fiction; but it is in fact *science fact*. Schumann frequencies have considerable measured overlaps with the biomagnetic fields produced by our heart and brain. All of these reasons may be why the Pineal and melatonin secretions are so implicated in those susceptible to "jet lag". This internal magnetic compass also tells us which way is up from a spinal point of view, during embryonic and young infant development. Disturbances of the developing Pineal may cause Scoliosis (spinal curvature) and other vertebral anomalies. From Iridology we can confirm these assertions, as with Scoliosis, you will find a prominent crypt, lacuna or pigment in the Pineal topography.

Embryology of the Pineal Gland

It is interesting from an immunological iridology point of view to note that both the pupils and Pineal are formed embryologically in the seventh week of gestation. The Pineal is derived from the hypothalamus.

On an embryological basis the Pineal consists of Ectodermic tissue, as are the:

- CNS and associated ganglions
- Adrenal medulla (site of noradrenaline production and release)
- Retina
- Pigment cells
- Peripheral nervous system
- Lens
- Internal ear
- Anterior and posterior pituitary
- Skin; cutaneous glands
- Breast tissues

The Pineal Gland in Iridology

The Pineal topography is located in both irides. It can be reliably found 3' to 4' on the external border of the collarette in the right iris and it is attached to the collarette in the left iris at 56' to 57'. The Pineal/Epiphysis forms the first part of the *Immune Axis* triad, together with Thymus gland and Adrenals.

In the new embryological topography of the iris structure, between the collarette and pupil we have located the Pineal/Epiphysis at 20º-22º in the right iris close to the collarette edge and at 192º in the left iris midway between collarette and pupil.

We must consider the pigment patch, consisting of thousands of pigment cells, to be the sign of vital importance in regards to the Pineal gland, alterations in melatonin levels and the development of cancers for the patient. This connection is made through the study of embryology, and the shared ectodermic origin of both pigment cells in the body and the Pineal, plus the breast tissues.

The presence of such a pigment is consistent for patients with Multiple Endocrine Neoplasia Syndrome 1 & 2, or MENS 1 or MENS 2.

> Any patient with a dark brown, red or black pigment in any of the classical or embryological topographies for the Pineal gland has to be thoroughly checked for cancers in the family medical history and advised to take regular preventive tests for hormonally dependent cancers anywhere, but particularly the breasts, skin and endocrine glands.

The following signs are generally found as Pineal gland markers in the Immune Axis or other conditions:

- Small closed lacuna
- Leaf lacuna (endocrine - melatonin, LH, GH, TSH)
- Crypt with pigment
- Pigment granulated path (orange or brown)
- Diffuse waterfall pigment (straw yellow)
- Major/minor radial (Radii Solaris) (melatonin - serotonin balance)
- Localised hypertrophy/indentation of the collarette
- Defect sign (pinealoma)
- General zig-zag or absence of collarette leading to diminished adaptability

Pupillary signs can include:

- Possible Anisocoria in pinealcytoma or pinealblastoma
- Frontal applanation of pupillary edge

Conditions associated with iris signs in Pineal/Epiphysis zones

- Seasonal Affective Disorder (SAD)
- Depression
- Sub-fertility
- Immune susceptibility
- Scoliosis (spinal curvature)
- Zinc deficiency
- Low libido
- Susceptibility to “jet lag”
- Insomnia
- Sleep apnoea
- Hypothyroidism
- Premature puberty in males
- Difficult puberty for females with susceptibility to infections and insomnia
- Hypertension
- Pinealblastoma
- Polycystic Ovary Syndrome (PCOS)
- Tumours
- Fatty degeneration of the liver
- Multiple Sclerosis
- Epilepsy
- Visual disturbances
- Dry skin problems on the hands
- Vitiligo

- Meiniere’s disease
- Hot flushes
- Poor injury repair

Therapeutic Influences on Modulating the Pineal Function

- Full spectrum light absorption through skin and eyes – Natural Light boxes
- Iris Phototherapy
- Exercise in the morning
- Colourpuncture - Hypothalamic-Hypophysis (Pituitary) – Epiphysis (Pineal) balance
- Adrenal and thyroid support
- Acupuncture
- Nutrition - particularly dietary zinc, selenium, manganese, magnesium, molybdenum, silicon, copper, vitamin D, vitamin C, Pantothenic acid, beta-carotene or vitamin E. Foods High in natural melatonin include Oats, Corn, Ginger, Tomatoes, Rice, Bananas and Barley
- Anti-geopathic and Electromagnetic pollution technologies
- Cranio-Sacral Therapy (CST)
- Advanced Reflexology Technique
- Homoeopathic Melatonin 6 – 30D (Used for the prevention and treatment of SAD, insomnia and the extremes of jet lag)
- Homeopathic Tryptophan D6 – D30
- Homeopathic Serotonin 4CH to 30CH

Herbal Medicines

- *Acorus calamus*
- *Vaccinium myrtillus fr*
- *Zanthoxylum clava-herculis cortex*
- *Hypericum perforatum flores*
- *Craetegus monogyna flores*
- *Ganoderma lucidum*
- *Lentinus edodes*
- *Coriolus versicolor*
- *Spirulina spp*
- *Paeonia lactiflora radix*
- *Rehmannia glutinosa radix*
- *Astragalus membranaceus*
- *Piper methysticum*
- *Escholszia californica radix*
- *Sceletium tortuosum herba*

Research with Exercise

I have found those experiencing Scoliosis, Subfertility, MS, depression and SAD benefit more when they exercise in the morning, usually before breakfast. I encourage all patients to do this, to whatever degree they can, as it can benefit their respective conditions and balance Pineal function so much.

Research suggests that daytime exercise can increase melatonin levels. While some studies report that the increase occurs during or immediately after physical activity, others point to a delayed rise that takes place in the second half of the dark phase. One group of researchers found that night-time exercise effectively blunts the nocturnal melatonin surge. And, in a unique study undertaken by Swiss researchers, daily hourly morning walks outdoors were shown to advance the onset and/or offset of melatonin secretion, and were twice as effective as low dose artificial light therapy in relieving the symptoms of SAD.

Prescription Drugs and the Pineal Gland

Many interactions can occur with common prescription drugs and the Pineal function. This can result in either elevated or depressed melatonin synthesis and melatonin levels. A combination of empirical experience and modern research has found the following to be important.

Fluoxetine (commonly known as Prozac) reportedly lowers blood melatonin levels. Antidepressants and other psychotropic drugs affect the synthesis and release of melatonin. Some monoamine oxidase-inhibiting (MAOs) drugs such as clorgyline and tranylcypromine seem to enhance plasma melatonin levels.

Some researchers suggest that sleep disruption associated with some nonsteroidal anti-inflammatory drugs (NSAIDs) such as aspirin or ibuprofen may be a result of decreased prostaglandin production, which can suppress melatonin secretion. Both ibuprofen and indomethacin significantly reduce melatonin plasma levels and delay the nocturnal rise of the circadian rhythm.

Beta Blockers can also significantly alter melatonin levels. Hypertensive patients undergoing chronic beta-adrenoreceptor blocker treatment with propranolol and ridazolol showed considerably diminished melatonin secretion. Propranolol hydrochloride also induced a noticeable decrease in serum melatonin levels in schizophrenic patients.

Light – Food for the Pineal and Other Endocrine Dynamics

Einstein stated that light was and is the connecting link between space, time and matter. It is possible to apply coloured light to the structure of the collarette to balance nervous system symptoms, circulatory concerns, immune reactions (allergies, etc) and endocrine concerns.

George Feverstein in Judith Cornell's book *Drawing the Light from Within*, notes that "We have not yet assimilated this…far reaching discovery; namely that energy or light is the principle underlying all manifestation. In other words we have not yet grasped that we, our bodies and our minds are light."

Changes in light and the perception of colours can elicit memories and emotions from long ago. They can also trigger physical symptoms.

The use of coloured strobe light has been shown to open up neural pathways from the eyes to key structures of the brain, for example, the limbic system; where most of our emotional trauma is stored. Light energy turns into electrochemical or neuronal energy by photoreceptors in the retina.

Light travels not only to the visual centres of the brain, but also to endocrine centres in the brain such as the Pineal, pituitary and hypothalamus. Light also reaches the brainstem. Impulses travel down the retinohypothalamic tract to the suprachiasmatic tract to the suprachiasmatic nucleas of the hypothalamus. The biological clock control is the Pineal secretion of melatonin and serotonin, both manufactured from the amino acid L-tryptophan.

See the Appendices for information about functional salivary melatonin testing and the charts for melatonin levels throughout the day and life

Over the last 35 years endocrine system research has measured changes in the following hormones and neurotransmitters in response to the intensity of light, colour, duration and timing of light stimulation:

- Cortisol
- Melatonin
- Serotonin
- Dopamine
- Insulin
- Adrenaline
- Noradrenaline
- Growth Hormone
- Testosterone
- Thyroid Stimulating Hormone
- Prolactin
- Adrenocorticotrophic hormone or ACTH

Thyroid Gland and Iridology Correlations

Introduction

Until fairly recent times the importance of the thyroid gland in relation to its overall influence on an individual's health has been overlooked, underestimated and even misdiagnosed. Indeed, today borderline thyroid dysfunction can go undetected and unrecognised by many doctors. Borderline hypothyroidism, in particular, is becoming increasingly commonplace in the western world and is a condition that goes undiagnosed because it does not necessarily show up on standard serum thyroid profiles or scans.

However, borderline hypothyroidism can cause multiple symptoms in different individuals that can have a debilitating effect on that person's quality of life. Many times the borderline hypothyroidism is attributed to many other conditions such as anaemia, chronic fatigue, constipation, eczema, depression, obesity, insomnia or PMT.

We will explore how iridology can offer enormous clarity in many thyroid conditions, not only borderline hypothyroidism. With the endocrine application of Iridology we can determine if someone has:

- A genetic tendency to thyroid problems
- How severe that tendency is
- If the tendency is towards hypothyroidism or hyperthyroidism
- If the tendency has an embryological beginning
- If we are experiencing the thyroid problem now

Embryology

Embryologists get very animated with the embryogenesis of the thyroid gland, as it is considered to be an extremely ancient gland. They relate its development to that of the gills in fish. The thyroid forms from the pharynx and controls foetal growth through its hormonal secretions from very early on after conception. The thyroid forms as an epithelial proliferation, or thickening, in the floor of the pharynx at about 24 days. This thickening is of the endodermic germinal layer in the midline between the right and left arch.

The thyroid descends in the front of the pharyngeal gut as a bilobed diverticulum. During this movement the thyroid remains connected to the tongue via a narrow canal termed the thyroglossal duct. This is how we are able to detect thyroid imbalance through tongue diagnostics. The origin of the thyroid in the tongue remains detectable as the *formanen caecum*.

From around the seventh week in gestation the thyroid has reached its final position in front of the trachea. Some authorities suggest that the thyroid does not start to function until three months of gestation, yet other experts suggest a very early functional beginning for the thyroid. Follicular cells, that produce the colloid that serves as a source of thyroxine and triiodothyronine,

begin to function at three months. Calcitonin is sourced from the parafollicular C cells, which are between the follicles.

Anatomy & Physiology

The thyroid gland is located in the neck in front of the trachea and inferior to the cricoid cartilage and larynx. It has two lobes, each about 5 cm long and joined by a narrow isthmus. The adult thyroid weighs about 25 grams. The two lobes are either side of the trachea and the oesophagus. The thyroid gland is bound to the trachea by the petracheal fascia so that it has movement with both trachea and larynx on swallowing, but it is not affected by a protrusion of the tongue.

Due to its high level of vascularity the thyroid has a much greater blood flow per gram than the kidneys. The inferior and superior arteries join within the gland.

The thyroid is drained via three main veins such as the superior thyroid vein, middle thyroid vein and the inferior thyroid vein. This inferior vein drains into the brachiocephalic veins. Both the superior and middle thyroid veins drain into the internal jugular vein.

Four main groups of lymph nodes are the collection points for the thyroid lymphatic drainage, these include:

- Prelaryngeal lymph nodes
- Pretracheal lymph nodes
- Paratracheal lymph nodes
- Deep cervical lymph nodes

Persistent cervical lymphadenopathy can disturb the thyroid function.

The thyroid gland is composed of approximately one million spherical follicles. Fortunately, someone else has counted these for us. Follicular cells are lined by a single layer of secretory epithelium. Thyroglobin is secreted into the colloid. Thyroglobin is a storage form of hormone. In fact, the thyroid gland is the only endocrine gland to store its hormone in an extracellular compartment.

It will be of paramount importance for the naturopathic practitioner to note that 2 to 3 months of thyroid hormone are stored within the thyroid follicles for times of need, thus delaying the onset of symptoms in deficiency conditions.

When the follicular cells enter an active secretory phase microvilli form on the inner surface and thyroglobin is absorbed. The colloid store shrinks as a result. The absorbed thyroglobin is broken down to release thyroid hormone.

The Endocrine Function of the Thyroid

Healthy Thyroid gland function is essential for:

- Regulating the general metabolism – the basal metabolic rate (BMR)
- Influencing weight and controlling oxygen turnover in every cell in the body
- Temperature control with the hypothalamus
- Calcium balance through the release of Calcitonin
- Certain functions of immunity
- Libido
- Fertility
- Energy reserves
- Growth and wound repair
- Memory and mental clarity
- Emotional well-being
- Hormonal balance
- Peristalsis – with the hypothalamus
- Lactation
- Nervous system functions
- Cardiovascular health
- Carbohydrate, lipid and protein metabolism – with the liver and hypothalamus

The entire blood supply within the body, which measures at around 10 pints, circulates through the thyroid gland once every 60 minutes. The thyroid sets how efficient the rate is at which cells utilise oxygen when the body is at rest.

The thyroid gland synthesizes and secretes three main hormones:

- T4 or Thyroxine
- T3 or Triiodothyronine
- Calcitonin

Calcitonin is involved with maintaining the balance of calcium. Hypothalamic thyrotrophin releasing hormone (TRH) is released from the hypothalamus to the anterior pituitary to stimulate the secretion of thyroid stimulating hormone (TSH). TSH acts on the extracellular receptor sites on the surface of the thyroid follicle cells. The whole cycle is controlled by the hypothalamus via biofeedback pathways.

An excess of thyroid hormones and glucocorticoids can inhibit thyroid hormone release, for example cortisol, by influencing the anterior pituitary function and suppressing TSH. Healthy TSH secretion improves thyroid vascularity and the actual size of the bilobed gland in order to improve general hormone synthesis. This is all monitored via the TSH blood levels by the hypothalamus and anterior pituitary gland, thus maintaining homeostasis and healthy metabolism.

Thyroid hormone release can be stimulated by long-term exposure to cold or oestrogens acting on the anterior pituitary. Adrenaline released by the adrenals has the ability to act on thyroid directly. From these insights we can see how stress can have the potential for such detrimental influence on thyroid performance.

Cyclic AMP or cAMP is formed after the TRH, TSH release and action. According to endocrinologist Debuse Sanders we then have the key stages of synthesis and secretion including:

- Iodine Uptake
- Thyroglobin synthesis
- Iodination
- Coupling
- Pinocytosis for secretion
- T3 & T4 are synthesized and secreted at a greater pace

The thyroid releases both T4 and T3 into the bloodstream. These two hormones can have an influence on every cellular process in the body. In fact they can cross all cell membranes, usually without a carrier transport mechanism. We usually have approximate-

ly 50 times more T4 than T3 in the blood, due to the thyroid secreting a lot more thyroxine. These thyroid hormones circulate bound to plasma proteins produced in the liver, which actually acts as a protection against aggression from enzymatic substances. 30% of these are bound with albumin. Thyroxine or T4 converts to T3 in the liver. Both T3 and T4 are derived from the amino acid tyrosine and iodine. Thyroxine gets its name because it contains three iodine atoms and the T4 contains, you guessed it, four.

There is also T1 and T2, which are diffused into the blood from the thyroid, but these are quickly broken down to "rescue" iodine molecules.

Hypothyroidism is indicated by low T3 & T4

Hyperthyroidism is indicated by high T3 & T4

In hypothyroidism low TSH levels suggests a pituitary or hypothalamic lesion

High TSH suggests a thyroid disorder

TSH is low in hyperthyroidism

Thyroid stimulating antibodies suggest autoimmune Grave's disease

Anti TPO & anti-thyroglobulin antibodies suggest autoimmune Hashimoto's disease

Iodine

Iodine is mainly obtained through supplemented salt and vegetables, including sea vegetables. RDA for Iodine is approximately 150 mg daily, however, only a small percentage of this is actually utilised. The thyroid gland cells are the only ones in the body that can actively absorb and use plasma iodine. Most plasma iodine is stored in the thyroid as preformed thyroid hormones, helping to protect against daily exposure to radiation. This is how "superfoods" such as Spirulina and Chlorella, both excellent sources of iodine, can help to protect and repair damage from radiation exposure.

A loop is established as iodine is returned to the plasma, as thyroid hormones are broken down, with a special emphasis on the liver functions. Iodine is mainly excreted via the kidneys. In hyperthyroidism the renal functions could be impaired, so it is prudent to check for other kidney signs through urine test, tongue analysis, scleral and iris signs.

Further information on iodine is covered in the Appendices.

Conditions Associated with Dysfunction of the Thyroid

- Hypothyroidism
- Thyroid follicular carcinoma
- Toxic adenoma ("Hot Nodule")
- TSH secreting pituitary tumour
- Hyperthyroidism
- Grave's disease
- Hashimoto's disease
- Iodine deficiency
- Goitre

Multi-Faceted & Integral

The Thyroid gland is a multi-faceted and integral part of the endocrine system. It is unfortunately, often overlooked in both allopathic medical and naturopathic approaches; yet its fine balance can easily be distorted through many causes such as stress, emotional blockage, prescription medicines, invasive medical tests, radiation, poor nutrition and/or food intolerances, hypoglycaemia, pituitary imbalance, adrenal insufficiency, fluoride poisoning, mercury toxicity, smoking, leaky gut and malabsorption syndromes, menopause, autoimmune diseases (Hashimoto's Disease, Graves Disease, RA, Vitiligo), post-partum Thyroiditis, anorexia nervosa, bulimia, congested or impaired hepatic pathways, genetic factors, Diabetes, tumours, parathyroid imbalance, viral infections, cervical and thoracic spinal injury, pernicious anaemia, hypothalamic damage, geopathic stress and surgery.

Original Research

The focus of the original study on 42 medically diagnosed cases of hypothyroidism and 12 cases of hyperthyroidism was to determine the (if any) correlating, reliable and repeatable iris and pupillary signs; in order to assess the value of Iridology as an additional tool and approach in thyroid disorders. Certain patterns had been identified; naturally they warrant further research for greater clarity. Larger study numbers would prove vital in this respect, so the numbers in the study since 2001 had been expanded to contain 112 confirmed hypothyroid cases and 22 confirmed hyperthyroidism clinical cases.

Classical Signs and Symptoms

Hypothyroidism

All practitioners should be very familiar with the other non-iridological clinical signs and symptoms of both hypothroidism and hyperthyroidism. This is not a discussion of these, as they are unequivocally established.

In brief, classical signs of hypothyroidism include:

- Dry skin
- Weight gain
- Hair loss
- Depression
- Reduced libido
- Moodiness
- Fatigue
- Excessive PMT
- Muscular and joint aches such as Fibromyalgia or Carpal-Tunnel Syndrome
- Proximal myopathy
- Low basal temperature measurement (below 97.8ºF / 36.6ºC)
- Loss of appetite
- Delayed wound healing
- Dysglycaemia – erratic blood sugar levels
- Coldness
- Poor concentration
- Memory problems
- Mental confusion, or mental fog

- Abdominal or systemic oedema triggered by an increase in capillary albumin escape
- Secondary amenorrhoea
- Easy bruising
- A slurring or slowing of speech
- Hoarse voice
- Constipation
- Thickened and flattened tongue
- Swollen eyelids
- Coarse skin
- Swollen face
- Thinning of the hair
- Bradycardia (Slow pulse rate)
- Transient deafness
- Slow relaxing knee reflexes
- Goitre
- Urticaria (precursor for autoimmune hypothyroidism)
- Decreased perspiration
- Breathlessness
- Loud snoring
- Headaches
- The outer third of the eyebrow may be missing
- Slow growing, brittle nails
- Dry and flaky skin on the shins
- Constipation
- Decrease in urinary free water excretion
- Erectile dysfunction
- Delayed puberty in adolescents
- Flat glucose tolerance curve with delayed insulin response
- Possible decreased red cell mass in the bone marrow leading to normocytic anaemia
- Night Blindness

Hyperthyroidism

Classical signs and symptoms of hyperthyroidism include:

- Anxiety
- Tachycardia
- Profuse sweating
- Oversensitivity to heat
- Weight loss in spite of increased appetite
- Increased pulse rate
- Loose bowels
- Agitation
- Mood swings
- Hyperactivity
- Talkativeness
- Myopathy of respiratory muscles
- Nightmares
- Decrease in glucose tolerance
- Insomnia
- Hot flushes
- Tremor in the hands
- Goitre
- Muscle weakness
- Elevated salivary cortisol levels
- Smooth and moist skin
- Menorrhagia
- Infertility
- Low sperm count and motility
- Palmar erythema
- Nails separate from nail bed at the tip
- Onycholysis
- Exophthalmos
- Lid lag and eyelid retraction
- Hair loss
- Proximal myopathy
- Keratitis
- Atrial fibrillation
- Palpitations
- Osteoporosis
- Reduced libido

- Bruit over the goitre through the stethoscope
- Quivering, thin tongue which does not rest

Tests

In order to further evaluate thyroid function, in addition to classical signs and symptoms in the patient's anamnesis and iridological signs - other diagnostic tests used include:

- Basal Temperature Measurement with glass thermometer over a month
- Pulse Rate
- Adrenal Stress Profile 24 hour Saliva Test
- Dried Layered Blood Analysis
- Gut Permeability Profile
- Nail analysis
- Tongue diagnostics
- Reflex Tests
- CT Scan
- Blood serum profiles

Blood tests can sometimes prove to be of a non-conclusive nature, possibly due to the fact only one sample is taken. So what we have is a snapshot of the day's thyroid performance that is acquired, not necessarily the bigger picture and daily fluctuations of the daily thyroid output.

Discussion of Iridology Markers

From the raw data presented patterns do start to emerge in regard to iris and pupillary signs and hypothyroidism. Due to the much smaller patient sample in the hyper-

Dr Broda Barnes pioneered the use of taking the Basal Body Temperature to measure thyroid performance in the 1940s. Indeed, its use has been known for many decades more. It proves to be a highly reliable test in the clinic today. It can provide a pattern of hypothalamus and thyroid function throughout the course of a month. I often ask patients to take their temperature for four consistent days in the week for at least a month. Low temperatures generally and in a morning before getting out of bed indicate low thyroid function. This type of test often identifies borderline hypothyroidism, which can often be missed by previous blood profiles.

The normal under the tongue temperature is 37˚, however for the BBT the normal temperature range changes to between 36.6˚ to 36.8˚. Any consistent readings, which are plotted on a graph I provide, which are under 36.8˚ illustrate borderline or clinically identified hypothyroidism. Temperatures can drop to as low as 35˚ in many cases. Glass thermometers are preferable to electronic thermometers and it is sometimes advantageous to ask the patient to take their temperatures at other times of the day, especially during the winter months in the north of England.

The full protocol for taking and recording the temperatures are included in the Appendices.

thyroidism group, this data is included for interest only.

We had a total of 112 medically confirmed hypothyroidism cases

The number of hyperthyroidism cases totalled 22 clinical cases

Lacunae

Lacuna (classical so-called 'Thyroxine' Lacuna, but also in some cases Leaf Lacuna) appear in 76 cases out of the 112 studied, with a predominance in the right iris @ 15' and 45' in the left iris. The lacunae are always attached to the collarette in pathological conditions, according to the research. Hepatic markings may be coincidental, but there is obviously a strong correlation, yet we have to be aware that T4 is converted to T3 in the liver. In regards to prevalence, lacunae dominate in hypothyroidism. Whereas, crypts dominate in the incidence of hyperthyroidism.

Collarette

A sharp and localised indentation of the collarette features in both right and left irides in 79 cases. Signs of this nature indicate a tendency to depression to manifest in hypothyroidism.

Surprisingly, associated pituitary markers, which can either be radii solaris, pigment, crypt(s) or lacunae, in either right or left appear in almost half of the case histories. Often these pituitary signs appear in conjunction with Thyroid crypts and/or lacuna. Thus illustrating the intimate communication between these two endocrine glands. A Thyroid Axis could provide clarity to any suspected hypothyroid condition.

A point of note is that the traditional area for the Pituitary (Hypophysis) is also the zone for the Thyroid gland in many French Iridology schools. So we do have topographical overlaps, which reveal the same conclusions, but a different mode of arriving there.

Pigment & Emotional Dynamics

General pigmented spots appeared of varying colours, in 48 cases for the thyroid zones from right and left irides. Gastric Rings (both hypo and hyperactive) appeared in the original research in 9/42 of cases. The updated figures for this are in hyperthyroidism 9/22 and 27/112 for hypothyroidism.

These signs also carry a high frequency in these irides, due to the fact that there is often psycho-emotional dynamics and conflicts involved between the thyroid gland and one's father or 'father figure'. The gastric ring (stomach zone) carries this dynamic. Research has shown a dominance of the Mixed Biliary type of iris in thyroid diseases. The Mixed Biliary iris can carry multiple pigments.

Time Risk

Also of significance on the border of the collarette, as a psycho-emotional factor is that clear Time Risk markings show one or two years before the onset of underactivity as noticed by the patient; which may not necessarily be medically diagnosed. This is what we now know as a Dirk-Hamer Syndrome, a delayed physiological stress response.

Emotional stress and conflict is often the trigger for the hypothyroidism. Issues around control, affection, one's father, fear of expression, injustice, sense of abandonment, lack of self-confidence and anger toward oneself. Correlating Time Risk markings appear frequently.

Crypts

Crypts appear predominantly in the Thyroid zones, again especially in the right iris for hypothyroidism at 90º. They are *the* dominant sign for hyperthyroidism, whereas the Thyroxine lacuna dominates in hypothyroidism.

> In both hypothyroidism and hyperthyroidism the iris sign will be attached to the external border of the collarette, not to the periphery of the ciliary zone. This is found to be the case in over 90% of cases.

If the Crypt is located attached to the external border of the collarette at 270º in the right iris, or 90º in the left iris then there is a tendency and family history of hyperthyroidism, often in the form of Grave's disease.

Crypts occur in the thyroid topographies in 17/22 hyperthyroid patients and 69/112 hypothyroid cases.

Embryological Topography

Research by Lo Rito & myself into this new topography of the embryological development of the individual is proving very reliable in the identification of thyroid gland pathologies. The research only included those patients with pre-diagnosed thyroid disease that had been comprehensively, medically established. As part of my research basis I looked at 50 cases and found a correlation of embryological signs in 88% of patients. The diseases examined included:

- Hashimoto's Disease
- Grave's Disease
- Thyroidectomy
- Goitre
- Thyroid cysts
- Myxoedema
- Thyroid adenoma
- Papillary adenocarcinoma

The most frequently observed signs included:

- Crypts
- Lacuna
- Pigments

The locations for the thyroid signs are to be found on the internal border of the collarette at 275º to 280º in the right iris and 82º to 87º in the left iris.

Peripheral Signs

Thyroid lunula or the so-called 'B3 Bulge' and Skin Ring ('Scurf') appear less frequently, but may carry significance. The skin ring shows atrophy of the limbus, or ciliary iris edge. In the French tradition of Iridology the Scurf Rim is linked to hypothyroidism. With this in mind, we certainly do not want to ignore these signs in thyroid dysfunction.

Pupillary Dynamics Discussion

Pupillary dynamics are important in Thyroid assessment. In hypothyroidism, however, Mydriasis and Miosis pupillary conditions appear almost as frequently as each other, which poses the need for further research in this area.

Classically, Miosis is said to suggest hypothyroidism and Mydriasis (when in both irides) attests to hyperthyroidism. From the small hyper sample the Mydriasis connection would appear plausible, with 80% of cases displaying Mydriasis. Yet in the hypothyroid sample, there is a conflict. In certain cases the pupillary Mydriasis can be accounted for in regard to chronic adrenal syndromes, but not all. This area definitely requires diagnostic clarity. Is it mydriasis or miosis for hypothyroidism? Is the pupillary diameter relevant at all?

Rapid Pupillary/Iris flight or pupillary oscillations in an initial superior temporal direction from a resting state has been observed in 5 cases. All these 5 patients were prescribed *Thyroxine*.

In 40% of the hyperthyroid cases a pupillary flight from an initial resting superior nasal to an inferior temporal direction was observed. Again, we have a rapid movement. Also, every one of these patients at the time of the study was taking *Carbimazole*, as prescribed specialist medicine.

Are these flights side effects of the drugs or markers in the particular condition?

Pupil Tonus

Nasal or temporal flattenings of the pupil circumference can amplify a thyroid problem. Vertical ellipse of the pupil can also be present in a number of thyroid cases, according to the research this incidence is @ 28/112 cases.

Inner Pupillary Border

Moving onto the Inner Pupillary Border (IPB) - the Space 7 location predominates. This author would suggest it is one of the three primary factors in iris and thyroid analysis. It is one of the most frequent and reliable signs. According to original work by Dr Lo Rito of Italy, Space 7 represents the Thyroid gland. Space 7 is located along the IPB at 51º to 60º and 295º in either right or left eyes.

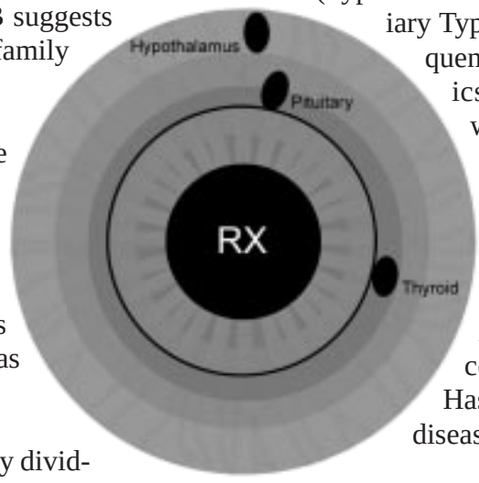
- Along with Space 7, the IPB diameters show consistency with Hypertrophic (-280 microns) and partially atrophic scale, according to Dr Di Spazio. Both suggest possible immune system complications and influence of the hypothalamus.

- With hypertrophy of the IPB we tend to see an autoimmune or overactivity of the immune system leading to Hashimoto's or Grave's disease.

- Hypotrophy of the IPB suggests hypothyroidism in the family history.

- A Squared appearance to the IPB illustrates a primary tendency to hypothyroidism in 89 out of the 112 patients studied. The squares tend to be solitary, as 61/89 cases suggests.

- If the squares are clearly divided we could be looking at problems with the parathyroid glands. This is a rare phenomenon along the IPB, I have only seen in cases of MENS – Multiple Endocrine Neoplasia Syndrome. MENS can involve tumours of the parathyroids and thyroid, plus pituitary, pancreas or adrenals.



Thyroid Axis

Five Primary Thyroid & Iridology Signs to Check

- Embryological Topography on the internal border of the collarette
- Squared Inner Pupillary Border
- Space 7 marking along the IPB
- Thyroid ('Thyroxine') Lacuna/Crypt, usually indenting the collarette
- Thyroid Axis

Constitutional Types

A breakdown of the general constitutional types displayed in the thyroid study group (Types acc. Deck) shows that Mixed Biliary Types were prevalent at a frequency of 39%. Haematogenics have 30% prevalence with Lymphatic Types at a frequency of 31%. There was not a lot of difference between them, although within the "Lymphatic" group there was a greater incidence of autoimmune conditions such as Hashimoto's disease, Grave's disease and Vitiligo.

An appraisal of the various subtypes has not made any patterns of incidence clear. Thyroid conditions were surprisingly infrequent in the Polyglandular (Endocrine weakness) subtype of constitution. The natural inclination is to suspect that most thyroid cases would fall into this category, but not according to the research. With this in mind, we can see the emerging importance of the reliability of the embryological diagnosis and full consideration of the Inner Pupillary Border with any possible assessment.

Mixed Biliary Types -	39%
Haematogenic Types -	30%
Lymphatic Types -	31%

Therapeutics

Herbal Formulae

Thyroid Support Formula

Fucus spp.
Lycopus europaeus
Withania somnifera
Avena sativa semen
Vaccinium myrtillus
Glycchriza glabra radix
Nasturtium officinale herba

Hyperthyroid Support

Lycopus spp.
Leonorus cardiaca folia
Valeriana officinalis radix
Urtica dioica folia
Coriolus versicolor

Associated Depression:

Sceletium folia, Hypericum perforatum, Rhodiola rosea

Associated Dysglycaemia:

Momardica charantia, Gymnema sylvestre, Centella asiatica, Glycrrhiza glabra radix, Spirulina, Nasturtium officinale, Dulse

Associated Radiation or Environmental Damage:

Salix nigra cortex, Chlorella, Lentinus edodes, Ganoderma lucidum, Arctium lappa radix & Chondrus crispus

Cardiac Thyrotoxicosis:

Craetegus monogyna flos/fruc, Leonorus & Viburnum opulus

Immunoendocrine Balance:

Cordyceps, Ganoderma, Vitex, Sutherlandia frutescens, Eleutherococcus senticosus radix & Withania

Contra-indications:

- *Ephedra sinica, Guarana, Cola nitida* are all contra-indicated in hyperthyroidism and for those taking Thyroxine with a daily dose over 75 mcg.

- *Lycopus* in hyperthyroidism with Thyroidectomy. Also for treatment with radioactive isotopes.

- In hypothyroidism all Goitregens such as vegetables from the Brassica family, peanuts, mustard and rape seed (Canola oil) or processed maize eaten in large quantities should be avoided as they can disturb the uptake of iodine in the system, thus reducing thyroid function.

- Black Radish Juice & *Medicago sativa* in large amounts in cases of hyperthyroidism.

- Iron supplementation can trigger an excess of tyrosine, blocking thyroid hormone absorption.

- According to current medical thought, Kelp should be contraindicated in any thyroid condition, for those taking Thyroxine, due to the high iodine content.

Gemmotherapy

- *Cornus sanguinea* with Hyperthyroidism

- *Ribes nigra gemmae* boosts the adrenal cortex and thyroid support.

- *Rosa canina gemmae* in adenoma of the thyroid.

- *Calluna vulgaris gemmae* in Hashimoto's disease.

- *Viburnum lantana* is indicated in cardiac Thyrotoxicosis.

- *Kigelia* to improve the health of the skin and the function of the CALT in hypothyroidism.

- *Betula pubescens* acts as a general tonic in all neuroendocrine conditions that stimulate an immune response. Betula helps to overcome physical and psychological problems that impair the endocrine system. It is particularly beneficial in cases of sub-fertility.

Homotoxicology

Homotoxicology as devised by Dr Reckeweg has developed many possible treatments and support in thyroid conditions over the years. I have found Strumheel drops to be most beneficial in hypothyroidism and as a goitre prophylaxis.

For hyperthyroidism Glonoin-Homaccord is indicated.

Galium is suitable across the board and due to the lymphatic node accumulation around the thyroid gland, if the patient has a history of or experiences frequent cervical lymphadenopathy then the combination remedy Lymphomyosot is suggested.

Other Therapeutic Considerations

Avoidance and elimination of fluoride, aluminium and/or mercury residues

Avoidance of sugar, tobacco, alcohol and radiation as much as possible

Balance blood sugar levels, immune function and hormonal system if necessary

Detoxify liver and digestive tract

Nutrition

Here we should be looking to source these vital nutrients through food we enjoy. The appendices carry a thorough exploration of these very foods to help point your patients in the right direction. Adequate levels of the following are required to maintain subtle, yet, significantly healthy thyroid functions:

- EFAs are essential for all endocrine functions

- Iodine

- Potassium helps the calcium balance

- Sodium

- Calcium – easily absorbed calcium rich foods are required to maintain a Calcitonin balance
- Copper – in many cases of underactive thyroid the intestinal and hepatic absorption of copper can be reduced. Copper helps to regulate the blood sugar balance and convert T4 to T3 at a cellular level in combination with many other trace minerals.
- Phosphorus
- Sulphur levels maintain optimum thyroid functions, so foods such as garlic, leeks, onions, etc are extremely important
- Manganese assists in the production of thyroxine
- Magnesium is required to balance thyroid function and blood sugar control
- Chromium for blood sugar balance and healthy communication between thyroid and adrenals
- Vitamin B12 is required to convert phenylalanine to tyrosine
- Riboflavin or Vitamin B2 helps the amino acid chain of phenylalanine conversion to tyrosine. Research has found patients with Riboflavin deficiency have a block in the production of Thyroid Simulating Hormone from the anterior pituitary and Thyroid Releasing Hormone from the hypothalamus
- Folic Acid – Martin Budd describes this B-vitamin as co-factor along with copper & vitamin C in the metabolism of tyrosine
- Vitamin C is involved in the metabolism of the amino acid tyrosine
- Vitamin D to assist in Calcitonin balance
- Vitamin E is needed for Thyroid Stimulating Hormone production and synthesis
- Selenium is integral to T4 to T3 conversion
- Zinc is required for the conversion T3 to T4 in the liver, growth and a healthy metabolism, plus the cultivation of fertility
- Tyrosine is an amino acid of incredible importance as it is the precursor for both T3 & T4. Some research has shown that tyrosine deficiency is apparent in hypothyroid patients.

Most thyroid conditions will benefit from the inclusion, pursuit or avoidance of the any of the following:

- An increase in seaweeds (Dulse, Kelp, Nori, Wakame or Chondrus)
- Spirulina or Chlorella supplementation
- Miso drinks or broths
- Potassium Broth
- Avoidance of refined sugars
- Reduction of Egg consumption
- Strict avoidance of artificial sweeteners
- Reduction of meat consumption
- Avoidance of Caffeine

Naturopathic & Lifestyle Protocols

- Colourpuncture (Star of David - Blue)
- Flower Remedies (Silver Birch, Trumpet Vine, Baby Blue Eyes, Cosmos or Cherry Plum)
- Homeopathic Support
- Acupuncture
- Yoga
- Cranio-Sacral Therapy & Somato-Emotional Release
- Advanced Reflexology Techniques
- Hydrotherapy
- Skinbrushing
- Deep Breathing
- Evocative Cutaneous Technique when Time Risk is indicated

The Endocrine Role of the Liver

The Regeneration Potential of the Liver

With any endocrine condition the practitioner needs to be vigilant of the status of hepatic functions. Indeed hormonal imbalance can occur when the liver becomes congested and fails to filter and detoxify as it once did. The liver really illustrates the marvellous wonder and potential of the human body to overcome any assault or adversary, as recovery from liver problems can be swift – usually taking one to three months. The liver has fantastic regenerative properties. Harvard Medical school researchers have concluded that the liver takes up to six weeks to replenish and replace all its cells. Personally, I have consulted with a male patient who managed to regenerate his liver in five weeks, after having two thirds removed surgically due to carcinoma. This was monitored via scans and documented by oncologists, and is just one story of many concerning hepatic regeneration potential. New thought and experience suggest that up to 80% of the liver can be surgically resected and still regain 70-90% of its functions and health.

Hormonal Balance

From an endocrine perspective it should be noted that the liver should help to inhibit increased secretion of:

- Insulin
- Glucagon
- Cortisol
- Aldosterone
- Thyroid Releasing Hormone (TRH)
- Thyroid Stimulating Hormone (TSH)
- Follicle Stimulating Hormone (FSH)
- Luteinising Hormone (LH)

Liver & Gallstones

Hormonal imbalance can also occur when liver stones and gallstones have disrupted the major circulatory pathways. Gallstones and liver stones can lead to diminished protein synthesis, which in turn prompts the adrenal cortex to overproduce cortisol. These consistently elevated cortisol levels are not sufficiently inhibited and processed by the liver due to the hepatic congestion, thus promoting susceptibility to stress, immune suppression, particularly with the hepatic Kupffer cells; weight gain and cholesterol imbalance and an increase in hormonal problems.

PMT, menopausal symptoms, Hyperprolactinaemia, Polycystic ovary syndrome, uterine fibroids, endometriosis and unstable blood sugar levels can all worsen as a result.

As the cortisol levels increase, atrophy of lymphoid tissues can take place over time, immunity is reduced due to lower levels of macrophages and natural killer cells and the febrile response is inhibited.

The Liver & Hormonal Building Blocks

Our livers are asked to filter our blood of toxic debris, metabolic waste, process fats and proteins and also cholesterol. Our livers are constantly producing cholesterol in order to stimulate and provide the building blocks for the production and synthesis of hormones, especially in reference to the adrenal hormones.

Hormonal Fluid Balance & the Liver

The liver and kidneys rapidly degrade excess of anti-diuretic hormone or ADH and free aldosterone in the blood. A plasma protein called angiotensinogen, which is synthesized by the liver is acted upon by renin. It then forms Angiotensin I. This is converted to Angiotensin II by the actions of ACE in the blood, thus the control of blood pressure.

The Liver's Role for the Menopause

The liver also takes on the production of oestrogen with the adrenal glands during and after the menopause. At the time of pre and peri menopausal times the liver's communication with the adrenal glands is enhanced and this has to form a basis for good health. If the adrenals or liver are functioning out of kilter, then extreme menopausal symptoms are a high probability.

Glycogenesis

It is accepted that the liver plays a vital part in the maintenance of the blood sugar concentrations with the pancreas, adrenals and the hypothalamus. The intake of glucose can be spasmodic and is usually linked to meal times, yet the liver will strive to maintain the blood glucose concentrations between 4-8 mmol/l. The liver is able to convert glucose to its storage form of glycogen. This process is known as glycogenesis.

After the intake of carbohydrate some glucose is permitted to enter the blood immediately, while the remainder is stored as glycogen in the liver tissues. When it is sensed that the blood glucose reserves are becoming depleted, the glycogen is metabolised by the liver after approximately an hour and a half after a meal. From the metabolism of the glycogen, glucose can be released into the bloodstream.

The only other organ capable of performing the liberation of glucose is the kidney, although this only tends to happen at times of starvation.

The muscles can also be indicated from an endocrine perspective in this process as cortisol, released by the adrenal cortex, stimulates the release of amino acids from muscle. These amino acids are taken up by the liver and converted to glucose.

Iris signs of inhibition of the aforementioned glucose and glycogen activities are orange pigments in the classical liver topography in connection with indentation of the collarette at 180º at the adrenal cortex. The indentation of the collarette is often accompanied with lacuna, crypt and or pigment granulation.

Thyroid Hormone Synthesis

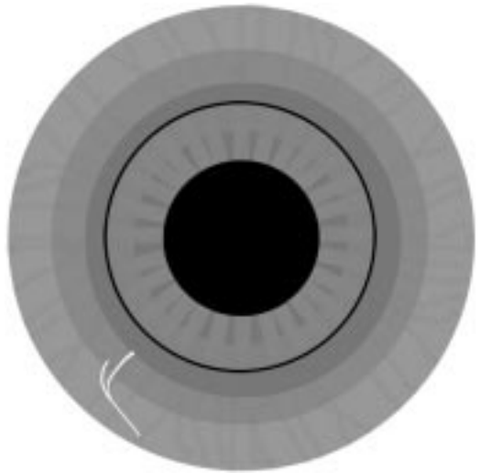
The Liver, as we have observed, can inhibit increased secretions of both TRH and TSH at critical times to maintain endocrine homeostasis. It is documented that we usually have approximately 50 times more T4 than T3 or tri-iodothyronine, in the blood, due to the thyroid secreting a lot more thyroxine. These thyroid hormones circulate bound to plasma proteins produced in the liver, which actually acts a protection against aggression from enzymatic substances. 30% of these are bound with albumin.

Thyroxine or T4 converts to T3 in the liver. In fact 80% of T4 undergoes peripheral conversion to the more active T3 in the liver and kidneys.

In Iridology, we find that many patients with either hypothyroidism or hyperthyroidism not only register iris signs in the recognised thyroid topographies, but also liver signs. This is discussed further in the chapter on *Thyroid Gland and Iridology Correlations*.

Iris Signs of Endocrine Dysfunction & the Liver

- Hedgehog Pigment Patch or patches that are topolabile
- Numerous Dyskratic pigments located throughout the pupillary and ciliary zones, usually brown or brown/orange in colour
- Indentation of the Collarette @ 20' and 40' in the right iris
- Alteration along the Inner Pupillary Border between 78º to 90º and 270º to 282º
- Alterations on 360º (Hypothalamus & Pituitary) plus Space 16 (Adrenal cortex) @ 112º and 248º
- Embryological Topography for the liver in both right or left iris with a pigment patch
- Partial Atrophy of the Inner Pupillary Border diameter



Liver Transversal

Therapeutic Protocols

- Liver Flush
- Gall Bladder Flush
- Flax Seed Oil (via Sub-Lingual Delivery)
- Olive Oil (via Sub-Lingual Delivery)
- Probiotic supplementation with *Bifidobacterium bifidus*
- Homeopathic *Berberis*

- *Carduus marianus semen*
- *Cynara scolymus folia*
- *Paeonia lactiflora radix*
- *Dioscorea villosa radix*
- *Bupleurum faculatum*
- *Coleus forskohlii folia*
- *Glycchriza glabra*
- *Berberis vulgaris*
- *Chlorella*
- *Ganoderma*
- *Curcuma longa*
- *Grifola frondosa*
- *Gymnema sylvestre*

The role of the liver in relation to overall immune system functions, including the Kupffer cells is covered in *Immunology & Iridology*.

Hypoglycaemia & Iridology

A look at Hypoglycaemia and Dysglycaemia from an Endocrine and Emotional Perspective

The identification of hypoglycaemia perfectly illustrates the potential of Iridology. I need to clarify before we really begin, that when I refer to Hypoglycaemia, it is not intended to mean a hypoglycaemic coma in Diabetes, which in England is often the medical definition of hypoglycaemia. The meaning behind this term in this perspective is a tendency to or actual low blood sugar. In the cases of dysglycaemia, an erratic blood sugar level is what is under scrutiny. In today's understanding of an erratic blood sugar balance and compromised regulation, the terms of hypoglycaemia and dysglycaemia can be considered interchangeable.

A tendency to low blood sugar can and often does present a myriad of acute and chronic symptoms which not only leaves the patient feeling overwhelmed, but often the practitioner as well!

Erratic blood sugar levels cause an alteration and crossover of the endocrine, metabolic, immune, nervous and digestive systems of the body.

Iridology can help to simplify all this confusion.

Diabetes Mellitus

An increase in blood sugar is well known as the condition of Diabetes mellitus. Elevated blood glucose levels occur after the intake of a carbohydrate meal or sugary food and remain elevated because the glucose metabolism by body cells is defective, the conversion of glucose to glycogen in the liver and muscles is diminished and glucogenesis occurs from protein in response to the deficient intracellular glucose. There are two type of Diabetes mellitus - Type 1 which is insulin dependent and usually begins in childhood and Type 2 which is non-insulin dependent and occurs in adulthood and is usually controlled by strict dietary method.

Diabetes mellitus is *hyperglycaemia*. Frequent urination, electrolyte imbalance, blood pressure problems, retinopathy, neuropathies, glaucoma and extreme thirst can all be symptoms of Diabetes. All of which is well documented and recognised medically. For further information please refer to chapter on *Diabetes Mellitus, Iridology & the Endocrine System* in this book.

Hypoglycaemia is on the Rise

Hypoglycaemia or low blood sugar is the opposite end of the spectrum to Diabetes. It is not so easily identified and not even recognised in some medical circles. Although it is a main cause of numerous symptoms and can prove to be very debilitating for many people. The blood sugar

levels can be erratic, in these cases we are faced with dysglycaemia.

Many people are not aware they have a tendency, or, actually experience hypoglycaemia, low blood sugar. You may feel like you're falling apart, overwhelmed with numerous, seemingly unconnected symptoms. These can be identified and addressed very easily with patience, dedication and the correct naturopathic approaches. I would estimate that 70 to 80% of the western world now exhibits a tendency to hypoglycaemia. It is interesting to acknowledge some research has shown that 75% of hyperactive children with learning problems have hypoglycaemia. Their blood sugar levels are very erratic and destabilised, leading to emotional and nervous system problems.

Medical blood tests do not always identify the problem conclusively, if at all. Usually the suggestion of low blood sugar indicated for certain symptoms is completely dismissed. Perhaps, due to the fact that it is difficult to conclusively prove from one functional test? However, Iridology can help to confirm and clarify the situation, plus point to how much of a risk, and how big that risk could be, with hypoglycaemia, Diabetes or dysglycaemia.

The Daily Rhythm of Blood Sugar Balance

Blood sugar levels naturally go along throughout the day's activities like a wave. Usually if you go longer than 3 or 4 hours without eating they will drop - this is when mild symptoms can occur, like a chocolate craving for example. The ingestion of the chocolate (which is usually high in refined sugar content) drives the blood sugar level up, as the hormone insulin is secreted at high levels by the pancreas to help balance blood sugar.

Too much insulin results in increased sugar being driven into the cells and as a consequence, after the artificial high blood sugar level from the chocolate, there is a steep drop in blood sugar levels. This particularly affects normal brain functioning as the blood chemistry containing circulating hormones changes dramatically. The rhythmic "wave" of blood sugar levels becomes more erratic, with sharp dips and elevations. This becomes difficult to identify through one random blood test. Also, one blood test is usually not enough as our blood chemistry is changing constantly throughout the day - hour by hour - in response to lack of food and nutrition, digesting a meal, stress, emotions, exercise and circadian rhythms.

Hormonal Connections

The three main hormones secreted by cells from the pancreatic Islets of Langerhans are:

- Glucagon, that increases the blood glucose (sugar) levels by stimulating the conversion of glucose (in the liver skeleton and muscles) and gluconeogenesis.

- Insulin, which maintains the homeostasis of blood glucose and promotes other anabolic and metabolic activities. It reduces high blood sugar levels by increasing the conversion of glucose to glycogen in the liver and skeletal muscles, accelerates uptake of amino acids by cells, and the synthesis of protein, promotes synthesis of essential fatty acids and storage of fat in adipose tissue and generally acts on cell membranes to stimulate an increase in the utilisation of glucose by muscular and connective tissue cells.

- Somatostatin, which is also produced by the hypothalamus, helps to inhibit the secretion of both glycogen and insulin. Thus having a modulating influence when functional pathways are in balance. Please refer to chapter on *Gastrointestinal Endocrinology in Iridology* for further information on somatostatin.

Symptoms That Develop With Low or Erratic Blood Sugar

There are many symptoms associated with both acute and chronic cases of hypoglycaemia. Many are well documented in the past 20 years by authors and practitioners. The naturopath Paavo Airola initially made the link with many symptoms and low blood sugar in the 1970s. Clinically we have to go back to 1924 and the work of an American GP called Seale Harris. In 1924, Dr Harris, a contemporary of Banting & Best, noticed that diabetic patients attending new insulin clinics, were in fact experiencing hypoglycaemia, not *hyperglycaemia* we would expect in diabetics. Dr Harris made further studies in his practice and found that many patients were experiencing many symptoms of low blood sugar, who were not insulin dependent or even diagnosed as diabetic. Imbalances in the sugar regulation mechanisms of the endocrine system were triggering these numerous symptoms.

Most of the symptoms of low blood sugar, we can all experience from time to time, due to transient hypoglycaemia which may be described as a temporary or passing drop in blood sugar levels, which is soon put back on track by the body's regulatory mechanisms. Some of these symptoms, you may well be experiencing *en masse* without any clear or apparent causative factors. If this is the case then suspect hypoglycaemia. When blood glucose concentrations drop sharply below 70 mg per decilitre adrenaline secretion is stimulated from the adrenals leading to excessive sweating, weakness and tachycardia (palpitations).

When the blood sugar concentration drops slowly then there is a more cerebral influence and confusion, speech difficulty, blurred vision and headaches may ensue.

These are common, usually transient, symptoms with hypo/dysglycaemia. From years of clinical experience I have readily identified the following symptoms that are acute and readily connected with blood sugar drops or erratic regulation:

Acute Symptoms

- Concentration difficulties
- Headache
- Nausea
- Migraine with nausea
- Irritability
- Indigestion
- Bloating

- Heartburn - acid reflux
- Sugar cravings
- Caffeine craving (fizzy drinks, chocolate, coffee, tea)
- Dizziness
- Shakiness and general feelings of weakness
- Excessive sweating
- Tachycardia (palpitations)
- Muscle weakness due to adrenal fatigue
- Numbness – pins and needles
- Panic attacks
- Forgetfulness
- Breathlessness
- Tinnitus
- Hyperactivity
- Fainting, in some extreme cases; blackouts
- Sore eyes
- Blurred vision
- Confusion and disorientation
- Speech difficulties
- Impatience

More chronic symptoms experienced clinically can be:

- Fatigue
- Thyroid imbalance - hypothyroidism
- Joint pain due to cortisol alterations
- Depression
- Mood swings
- PMT
- Polycystic ovaries - PCOS
- Cold extremities
- *Lichen sclerosis*
- *Candida albicans* overgrowth
- Nightmares
- Epilepsy
- Adrenal exhaustion
- Melatonin imbalance
- Subfertility
- Gastric ulcers
- Allergies
- Agoraphobia
- Anxiety
- Obesity
- Caffeine addiction
- Alcohol addiction
- Chocolate addiction
- Sugar addiction
- Vertigo
- Asthma due to continuous depleted blood sugar levels triggering elevated histamine levels
- Low libido
- Stomach cramps
- Eating disorders
- Angina pectoris
- Neuralgia
- Hypertension
- Rheumatoid arthritis and other inflammatory autoimmune diseases
- Postnatal depression
- Suicidal tendencies in extreme cases
- Hyperinsulinaemia
- Syndrome X

These can overlap in certain individuals. The chronic symptoms tend to develop over years from the root cause of the problem being overlooked and not addressed, thus untreated. The acute symptom, unheeded overtime, can become the chronic disease or syndrome. A tendancy to dysglycaemia can develop into type 2 Diabetes, if left untreated for 20 to 40 years.

Dysglycaemia

Dr Gerald Reaven, from the Stanford University School of Medicine, has estimated that approximately one out of every four non-obese individuals with normal glucose tolerance (as measured by a two hour oral glucose tolerance test) has a functional insulin-resistance in which hypersecretion of insulin is required to maintain normal blood sugar levels. This insulin-resistance is caused by the muscle tissue resisting glucose uptake. Most blood and oral glucose (tolerance) tests are not capable of identifying these swings, now often referred to as dysglycaemia. Dysglycaemia is sometimes bound up in the modern Syndrome X. Syndrome X can lead to PCOS, heart disease or obesity.

Fortunately through an Iridology examination a tendency to and apparent hypoglycaemia can easily be identified. As can reactions to the ingestion of sugar. In addition to the iris then, the mannerisms of the patient, analysis of the tongue and subsequent case history can prove to be invaluable in diagnosing and assessing the problem.

Genetics & Iridology

Most people living generally healthfully and in context with what their individual constitution dictates do not start to really experience blood sugar fluctuations until their 30's and 40's. This is when any weakness can begin to manifest and really hit hard, and that individual is living out of their context, genetic balance or equilibrium.

Again, Iridology can identify this tendency in a non-invasive and accurate way, years before any problem is apparent; and preventative measures can be implemented.

We have no one constitutional type that fits into a classification of blood sugar constitutional subtype. In the research the typings were distributed throughout the twenty plus constitutional types and sub-types (predispositions). However the main identifying pancreatic signs can be different within the types.

The Causes of Hypoglycaemia Can Be Numerous

- Not eating something every 3-4 hours. Going too long without food, without refuelling. A lot of people need to "graze" through the day

- Eating too quickly. Not masticating enough. We should chew each mouthful of food at least 30 times, according to the latest research to fully 'pre-digest' it! This balances the secretion of pancreatic, liver and stomach enzymes, hormone peptides and saliva pH.

- Too much refined sugar, carbohydrates and saturated fats in the diet

- Refined sugar, used consistently and excessively forces pancreatic overstimulation to take place leading to elevated insulin secretions, hyperinsulinaemia, and finally insulin resistance

- Too much coffee, tea and alcohol

- Water-insoluble low fibre diets which increase gastric emptying and the breakdown of starch

- Chronic stress and emotional trauma, which can lead to adrenal fatigue and exhaustion
- Inability to manage the aforementioned stress
- Impaired Liver function, leading to congestion
- Thyroid gland imbalance (which may be linked to adrenal exhaustion)
- Chronic Dehydration
- Using artificial sweeteners in beverages, fizzy drinks, toothpaste, "sugar-free" drinks, etc (refined sugar will actually be better processed by the liver and pancreas)
- A background of chronic intestinal dysbiosis
- B-Vitamin deficiency
- Amalgam fillings that are leaking vapours
- Personal history of Pancreatitis
- Mineral deficiencies such as chromium, magnesium, zinc or copper
- Food intolerance such as sugar, eggs and white flour
- Smoking – each cigarette smoked can elevate the blood sugar in equivalent measure to two teaspoons of sugar
- Eating disorders such as Bulimia
- Crash diets
- Deficiency of Essential Fatty Acids
- Lack of exercise and sedentary lifestyle
- Emotional issues such as unresolved betrayal, fear, mother concerns, lack of love, indecision, regrets, feelings of discord and anger toward self, can all be factors in disrupting the adrenals, liver function and blood sugar equilibrium

Herbal Medicine

For many years I have used a polypharmacy approach to formulate the following Pancreas Support Tonic. It supports all the appropriate pathways and imbalances to regulate blood sugar control, plus it is worth informing your patients of its pleasant taste. I have found it extremely successful over the years and now many of my colleagues and students utilise the same basic formulation:

- *Vaccinium myrtillus fruc*
- *Glycrrhiza glabra radix*
- *Filipendula ulmaria folia*
- *Carduus marianus semen*
- *Zingiber officinale radix*
- *Arctium lappa radix*
- *Taraxacum officinale radix*
- *Juniperus communis fruc*
- *Trigonella foenum graecum semen*
- *Foeniculum vulgare semen*

We can also use the following botanical tinctures or tisanes if required:

- *Centella asiatica*
- *Nasturtium officinale*
- *Curcuma longa rhizoma*
- *Urtica folia*
- *Ganoderma lucidum* as a capsule
- *Momardica charantia* taken as a tea or fresh vegetable
- *Aspalanthus linearis* as a tea (Rooibosch)

Nutritional Support

- Spirulina (high in chromium, zinc, B-vitamins, magnesium)
- Chromium rich foods
- Essential Fatty Acids from cold pressed oils such as Borage Seed or Flax
- Magnesium rich foods
- Nutrisorb – liquid trace mineral formulation by Biocare, containing elemental chromium, selenium,boron & manganese
- Copper
- Zinc
- Vitamin C & Bioflavanoids
- Selenium
- Pantothenic acid - B5

Treatments

To control and manage erratic blood sugar levels dietary adjustments are the essential bedrock. This foundation helps to stabilise and provide the foundation for the patient to steadily improve and see most, if not all, of their symptoms disappearing.

Refined sugars and caffeine containing drinks need to be cut down or eliminated, depending on individual circumstances and symptoms. These withdrawals usually need to be conducted slowly, but surely.

- Fresh water intake needs to be increased.
- Food should be eaten every three or four hours and then chewed thoroughly.
- Alcohol use should be kept a minimum and tobacco use eliminated altogether.

Nutritional support to create a stable wave of blood sugar regulation throughout our waking day can also be used. This would include Spirulina, which I find stabilises patients' blood sugar extremely well and for sustained periods of time. Essential Fatty Acids (EFAs) and a variety of foods rich in any of the following: chromium, magnesium, zinc or copper. I usually present my patients with information sheets, containing the richest food sources of these. I have made representations of these in the Appendices of *Immunology and Iridology*.

To influence blood sugar control foods such as Karella, Avocado, Papaya, Beetroot, Carrots, Watercress, Ginger, Barley, Quinoa, Buckwheat and Turmeric can certainly be added to the regular dietary measures.

Iridological Signs

So how can Iridology simplify the situation with all these influences and symptoms? From the study of 1,500 patients I have found prominent, frequent and recurrent iris and pupillary signs which illustrate the general tendency to low or erratic blood sugar and also specific differentiations of iris markings relating to the physical symptom and/or underlying psycho-emotional trigger or cause. We can also use Iridology to help

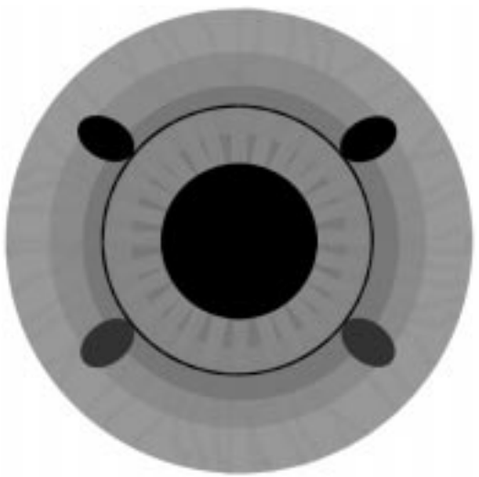
differentiate between hypo/dysglycaemia and Diabetes mellitus.

With any form of push to achieve blood sugar balance we need to familiarise ourselves with the role of the:

- Pancreas
- Hypothalamus
- Adrenal glands
- Liver

Predominant Iridology and hypoglycaemia detection signs include:

- General orange pigmentation - either appearing as granulated patches or general colouration such as central heterochromia. Orange pigments are topolabile signs for the pancreas. Solitary orange pigments carry greater authority in terms of diagnostic priority



4 Pancreas Collarette Topographies

- Lacuna (giant, single or double) on the external border of the collarette in the topographical zones for the pancreas at 10', 20', 40', 50' minutes right and left irides

> Lacuna on the external border of the collarette in the region of 40 minutes right iris and 20 minutes left iris may need a differential diagnosis of testicular problems or epididymitis in males and ovarian concerns or salpingitis in females

- Crypts in these same locations; pointing to the probable severity of the condition. Solitary crypts are given high priority in helping to assess the potential for extreme symptom reactions to the blood sugar drops

- Prominent signs in the liver, adrenal and hypothalamus zones. Embryological topography takes precedence here for this. A possible "Hypoglycaemic Axis"

- Inside the internal border of the collarette we can often see crypts or pigments in relation to the pancreatic zones and the above liver, adrenal gland and hypothalamus areas. The location of these pancreatic, adrenal, liver and hypothalamus zones is a new topography, one that is based on 5 years clinical research in the UK and Italy. The pancreas zones are located at 60º, 120º & 235º in the right iris. In the left iris we find the pancreas at 50º, 240º and 300º

- Slight vessel honeycombing in the sclera - which can appear nasally or temporally. This can show an intolerance or an aggressive systems reaction to refined sugar. Appearing between 12 to 24 hours after ingestion. See chapter on *Diabetes Mellitus, Iridology & the Endocrine System* for further differentiation

- Inferior temporal and inferior nasal pupillary flattening and dynamic of mydriasis can accentuate the reality of the other signs, due to the adrenal involvement

- The more of these signs that appear the greater the genetic inherent and personal tendency to hypoglycaemia

- On the flipside to this a solitary small pigment, crypt, lacuna or collarette indentation, located in an iris which carries little else that stands out can show a greater relevance or drastic nature of the condition

- Crypts featured in the new embryological topography of the collarette in the pancreas locations carry the highest degree of tendency and speedy evolution of symptoms

- A collaret slant (Linear Collarette) in the temporal iris between 1' and 2' accompanied with an adjacent pupillary flattening indicates a tendancy to hyperinsulinaemia after prolonged hypoglycaemia

The Inner Pupillary Border

The Inner Pupillary Border (IPB) carries several signs that can illustrate a tendency to blood sugar imbalance. Based on studies with over 1,500 patients these include:

- Partial atrophy of the IPB diameter in 823 cases

- Slight swelling of the IPB at 98º to 103º and 262º to 257º for the topography of the pancreas (Local pancreatic hypertrophy). Also, indentation of the IPB/pupillary margin in these locations for 1012 of the patients. Also indentation of the IPB/Pupillary margin in these locations for 1012 of the patients

- Signs in this location that help to form the Depression Axis on the IPB

- Absent IPB between 356º to 4º in the hypothalamic topography in 648 of the patients

IPB Diameter	Cases out of 1500
Partial Atrophy	823
Normal	98
Hypotrophy	27
Hypertrophy	522
Atrophy	19
Mixed	11

- Claws situated sporadically along the IPB. The “claw” reaches out to the iris. Claw signs are markers for migraine. Migraines are often triggered by low blood sugar levels. 426 patients had claw signs in the study

- General hypertrophy of the IPB suggest a greater need for chromium. 522 of the patients in the study had a hypertrophic IPB

- An S sign located anywhere around the IPB circumference often suggests tendency to elevated prolactin levels. Hyperprolactinaemia can cause hypoglycaemia, and vice versa

Emotional Issues & Hypoglycaemia

Iridology signs integrate with underlying emotional traits that can be part of and the causative agent in hypoglycaemia. These often include:

- Indecision
- Fears of being alone
- Irrational impatience
- Anxiety
- Panic - loss of feeling in control
- Depression
- Spontaneity
- Expressive emotional warmth
- Betrayal - which can be identified through the existence of lacuna in the pancreatic organ zones or through orange central heterochromia if the betrayal is within the family – please refer *Emotional Approaches in Iridology*

It is often said that talk of psycho-emotional aspects denigrates Iridology - but I feel it empowers and progresses Iridology as we all consist of numerous levels - physical, emotional, spiritual etc. and this is what we are presented with in practice; with real people not simply medical models.

In essence, Iridology does not necessarily reflect the symptoms but the underlying, what appears to be a hidden cause or causes of the problem called hypoglycaemia. Iridology is able to provide clarity to the many symptoms patients experience and usually at a time when they are feeling overwhelmed, drained and worried something more serious is happening to them physically and mentally.

Endocrine Alterations Due to Blood Sugar Imbalance

Dysregulation of the blood sugar levels can have profound short and long-term effects on the health of the endocrine system. Many patients experiencing endometriosis, PCOS, Subfertility, chronic fatigue, hypothyroidism, hyperthyroidism, uterine fibroids, breast problems or PMT have an undiagnosed background of chronic erratic and low blood sugar levels. In fact, what can really aggravate PMT symptoms for women is hypoglycaemia.

The iris helps to determine the background to any given hormonal concern. From the research and clinical experience in these areas, the background is usually one of low blood sugar. To really begin to help balance the endocrine system, the initial therapeutic foray should be to stabilise underlying blood sugar balance.

In summary I think it is correct to state that balanced blood sugar levels equate to a healthy and balanced hormonal system.

Gastrointestinal Endocrinology in Iridology

Introduction

In Endocrinology the gastrointestinal tract is now termed an example of diffuse endocrine tissue. The combination of endocrine functions and the gastrointestinal functions opens up many exciting and favourable prospects in endocrinology, natural medicine and iridology. The fact that the pupillary zone betwixt collarette and IPB is representative of the gastrointestinal organs, gives confirmation of the research that suggests the collarette is a barometer for the endocrine system, especially when signs are attached to the collarette's external border.

In addition to this we have further validity for the innovative embryological approach in iridology, which places the organs and glands internally to the collarette and highlights their origins and embryogenesis (refer *Embryology & Iridology* by Lo Rito & Andrews).

This work on gastrointestinal endocrinology in iridology is based on six years of research and protracted efforts in this area.

Integrated gastrointestinal endocrine communication is paramount for healthy digestion, a vital immune system & general hormonal health.

Discovery

It was in 1902 that Bayliss and Starling, two English physiologists, first postulated the concept of hormones. They deduced that a blood-borne signal called Secretin by the duodenum acted on the pancreas. They called this hormone Secretin and the name is still used in endocrinology today.

APUD Cells

Endocrine cells are distributed all along the gastrointestinal tract. These are called enteroendocrine cells and are a type of APUD cell. APUD cells are peptide-secreting cells found throughout the body such as the Islets of Langerhans cells in the pancreas that secrete glucagon and insulin, juxtaglomuerular complex cells secreting renin in the kidneys, parafollicular cells secreting Calcitonin in the thyroid gland and respiratory neuroendocrine cells secreting 5-HT or serotonin.

APUD cells share physiological characteristics and origins. They have embryological beginnings from the endodermal gastrointestinal tract, and have similar biochemical pathways for amine or peptide hormone synthesis, as the name APUD is an abbreviation for Amine Precursor Uptake and Decaboxylation. Also, they all have to be viewed under electron microscope to see their similar neurosecretory granules.

The similarity between the brain and the intestines is not a coincidence, as the APUD cells have the same embryological origins as the brain. The APUD cells of the intestines are believed to derive from the neural crest of an embryo, which then goes onto form the brain and spinal cord, thus we can see a common ground and shared physiology and biochemistry between the intestines and the brain. We can also see the connections with the collarette and Inner Pupillary Border.

At least twenty hormones and peptides have been documented along the GI tract. These hormones and peptides are secreted to control and organise digestion and also the absorption of food.

Gastrointestinal Peptides as Neurotransmitters

Certain gastrointestinal peptides such as vasoactive intestinal peptide or VIP, cholecystokinin or CCK or gastrin can also act as neurotransmitters in the neurons innervating the enteric nervous system, and also the central nervous system. Somatostatin, enkephalin and Substance P can also act as neurotransmitters and neuromodulators. These overlaps present us with several possibilities to further our understanding of what we can identify within the iris.

In the brain and intestines the following act as neurotransmitters:

- Serotonin
- Acetylcholine
- Noradrenaline

In the intestines and the brain we have receptor sites for all three neurotransmitters or gastrointestinal/neurohormones.

Also many endocrine glands, such as the pituitary or thyroid, derive from the intestinal tissues during embryogenesis.

Iridological Potential

Firstly, the enteric nervous system relates to embryogenesis and the holistic understanding of the new embryological topography in iridology. Secondly, the importance of the collarette in endocrine assessment is highlighted, and thirdly the Inner Pupillary Border as an extension of the central nervous system has the potential for neuroendocrine analysis.

From these crossovers in gastrointestinal endocrinology we can readily identify the common bond and intimate relationship the endocrine and nervous systems share. It also illustrates the common origin both these systems have in embryology and how we can expand iridology research to understand this profound link.

Gastrointestinal Tract Peptides and their Iris Signs

Before we begin we need to make ourselves aware of several facets in this arena. The connection between gastrointestinal endocrinology and iridology is still in its infancy. The information presented here is incomplete. I dare say further clarification will appear with our continued research endeavours in this field. This premise does not, however, eradicate any unseen errors or research that may require honing.

How do the gastrointestinal peptides and hormones reach their target cells? Well, we have two modes of delivery. Firstly via the blood, hence the definition of endocrine. Secondly, due to the local affect of nearby cells or paracrine exchanges.

Sometimes peptides, such as somatostatin, can act in both endocrine and paracrine ways.

Let us begin with the hormone that started it all:

Secretin

Secretin is secreted by S cells in the duodenum and also the jejunum and ileum in response to the gastric acid secreted by the stomach, that arrives in the duodenum. Secretin consists of 27 amino acids. Secretin then acts via cAMP to stimulate the secretion of pancreatic and hepatic bicarbonate ions. This activity probably involves CCK also. Secretin also enhances the secretion of insulin and bile, plus triggers closure of the pyloric sphincter, thus decreasing gastric acid secretion from the parietal cells in the stomach. The secretion of secretin stops when the duodenal contents pH rises beyond 4.5 as a result of the alkaline pancreatic secretion.

Secretin is a major factor involved in controlling insulin secretion from the pancreatic β-cells. Secretin has also been identified in the brain tissues, leading to connections with neuroendocrine possibilities.

Iris signs to observe for in relation to potential secretin disturbances include:

- Absent section of the Inner Pupillary Border at 100º to 104º or 260º to 264º
- Small granulated dotted orange pigment in the embryological topography of 200º to 220º in the right iris (Andrews)
- Distended and thinning collarette structure – either a gross or local distension are possible. A distended collarette reveals the pupillary sphincter. The pupillary sphincter is a red herring when it comes down to gastric secretions, the collarette should be the focus

Gastrin

No prizes for guessing where gastrin originates! Yes, gastrin is secreted in various forms, the main one comprising 34 amino acids, by the enteroendocrine cells in the pylorus of the stomach after we eat a meal. In classical iridology Josef Deck and colleagues in Germany from the 1940s to 1970s, have been able to document and chart the classical iris topography for the pylorus through x-ray and autopsy comparisons.

Gastrin is secreted in response to peptides, amino acids and even essential fatty acids in the stomach. Stimulation of the vagus nerve or distension of the stomach through food or drink content results in gastrin secretion. This is why it is so important not to overeat. In the absence of food gastrin secretion can be stimulated by increased activity of the autonomic nervous system due to stress. With this in mind, it is not surprising to

learn that elevated adrenaline can trigger gastrin secretion.

The main focus of gastrin is to increase the secretion of gastric acid. This is through direct effect on the parietal cells or it can involve the potentiation of histamine induced gastric acid secretion. In general it is gastrin working as the facilitating force of the movement of the stomach contents into the duodenum by increasing both gastric and intestinal motility. The pyloric sphincter is also relaxed and contraction of the gall bladder results in the release of bile salts to the general mix. The ileo-caecal valve or sphincter is also relaxed, which permits the transit of food from the small intestine to the large intestine.

Meanwhile, the secretion of gastrin increases the breakdown of proteins via stimulation of hydrochloric acid production and intrinsic factor in the stomach, plus the secretion of pepsin in the stomach.

Research has found that gastrin can be inhibited through feedback control and the action of VIP, glucagon and somatostatin. Like secretin, gastrin has also been identified within the brain. It can stimulate secretion of growth hormone from the anterior pituitary.

Zollinger-Ellison Syndrome

In this condition we have excessive secretion of gastrin and thus, gastric acid. Ulcers of the stomach and diarrhoea can occur, due to the over-acid environment disrupting the normal digestive enzymes.

Gastrin secretion is under the control of negative feedback, thus the pH of the stomach contents is vital and previous medical attempts to treat Zollinger-Ellison syndrome with antacid drugs resulted in the unforeseen adverse reaction of increased gastrin secretion. Sometimes the cause is a gastroma in the pancreas, which can be surgically removed. Subsequently, it has been found that histamine antagonists such as Cimetidine or Zantac, plus proton pump inhibitors such as Losec or Zoton are much better at alleviating the ulceration and acid production.

Treatment from a natural perspective could be tried with the following:

- Water Therapy
- Slippery Elm
- Psyllium Husks
- *Urtica folia* tincture
- *Artemisia vulgaris folia*

Iris Signs to observe for gastrin include:

- Distended collarette
- Local indentation of the collarette at 345º in the right iris and 15º in the left
- Pituitary Lacuna at 360º on the external border of the collarette
- Embryological Topography for the anterior pituitary at 345º to 350º in the right iris and 10º to 15º in the left iris
- Defect signs or crypts in classical pyloric topographies
- Small granulated solitary pigment in the stomach topography
- Grey hazing of 1/2 the gastric zone

- Globular or slightly hypertrophied Inner Pupillary Border structure at 92º to 96º and 266º to 272º
- Very bright stomach ring or visible pupillary sphincter in Zollinger-Ellison Syndrome. This stomach ring is accompanied by multiple defects in the stomach zone

Glucose-Dependent Insulinotrophic Peptide (GIP)

Glucose-dependent insulinotrophic peptide used to be called gastric inhibitory peptide, but was also known as GIP. The name was changed according to Debuse Sanders because “this was inaccurate and too easy to pronounce”. It is not secreted in the stomach, but by K cells in the mucosal lining of the duodenum, jejunum and ileum.

Triglycerides and the presence of glucose in the intestinal tract stimulate the release of GIP. Also it is documented that GIP has actions on the liver, adipose tissue (leptin), muscles and the brain, where it potentiates the actions of insulin and acts very diametrically opposed to glucagon.

GIP inhibits gastric acid production and gastric motility, but stimulates insulin secretion by the β cells of the Islets of Langerhans if we have high blood sugar levels. GIP contains 43 amino acids.

Iris & Sclera Signs to observe for include:

- Honeycomb with pronounced and thickened vessels in the sclera, usually located temporally
- Changes to fovea seen under Retinoscopy
- Squared Collarette
- Restricted and zig-zag collarette in the right iris located between 190º to 310º
- Pigments – small orange granulations, which can be solitary in either embryological or classical duodenum topographies. Also we often have such pigmentations in the classical jejunum or ileum topographies, as charted by Russian & German iridologist researchers from the 1950s to the early 1990s via combinations of iridology and conventional diagnostic methods such as autopsy, scan or X-Ray

Somatostatin

Somatostatin is perhaps most well regarded in this field due to being secreted and controlled by the hypothalamus. In the chapter on the hypothalamus in *Immunology & Iridology*, it is highlighted that somatostatin is called growth hormone inhibiting hormone or GHIH when it is secreted from the hypothalamus. Recently, however, it has been discovered that somatostatin is also secreted by the δ cells of the Islets of Langerhans in the pancreas, plus, like VIP, via the gastric mucosa and intestinal neurons.

It is interesting to note that somatostatin secreted by the gastric mucosa and pancreas contains 14 amino acids while the intestinal somatostatin consists of 28 amino acids.

The release of somatostatin is triggered by the presence of another peptide CCK or cholecystokinin, acidity or amino acids in the stomach or high blood sugar levels.

Somatostatin really has the ability to slow down digestion by inhibiting secretion of all the other pancreatic hormones, like insulin for example, and gastrointestinal hormones, such as gastrin, plus the secretion of pancreatic enzymes and bile. Both gastric emptying and motility of the intestinal tract can be decreased through the release of somatostatin, plus the control of peristalsis from the hypothalamus.

Somatostatinoma

These types of hormonal secreting tumours can cause intestinal obstruction, but this is an extreme and the patient may never be aware of somatostatin excess, other than symptoms of constipation. However, if the somatostatinoma is in the pancreas then the patient is faced with increases in circulating hormones accompanied by a range of gastrointestinal symptoms, including predominantly mild Diabetes mellitus, triggered through insulin secretory inhibition. This in turn slows gastric emptying and can inhibit the gall bladder, thus causing the formation of gallstones, which can be confirmed through the use of tongue diagnostics and ultrasound.

Iris Signs to observe changes in somatostatin secretion include:

- Initially observe for any potential signs for the hypothalamus, including classical and embryological topography. All hypothalamic signs will be attached to the collarette and may manifest either as local indentation, leaf lacuna, radial furrow or orange pigment patch
- Restricted collarette structure
- Misshapen collarette structure that is common in autoimmune conditions
- When the immune system is under stress the zig-zag collarette structure can manifest a tendency to an inhibited somatostatin release. This often results in an overactive digestive system and diarrhoea, plus dysbiosis
- Orange pigments attached to the collarette in the four classical pancreatic locations charted by Jarosyck in the 1960s
- In pancreatic somatostatinoma observe for marked indentation of the collarette structure at 42' in the right iris only. Makurchuk, *et al* researched that this sign was prominent statistically in clinical cases of gall bladder patients in Russia
- Intestinal transversal in the same location as the aforementioned indentation in the right iris or, more frequently, in the left iris anywhere between 120º to 150º along and into the collarette

Cholecystokinin

Cholecystokinin or CCK, as it is better known, is another hormonal peptide secreted by the duodenum. Again this offers further validity to the assertion that the majority of endocrine tendencies are located attached either internally and externally to the collarette border. CCK usually consists of 33 amino acids in its most common form. When we eat gastric acid is produced which passes into the duodenum with amino acids and fatty acids, the presence of these triggers the release of CCK. The CCK increases the hepatic production of bile and contracts the gall bladder to mix bile salts with the contents of the duodenum at that time. Pancreatic enzymes like lipase are also secreted at this time due to the stimulation of CCK.

CCK used to be called CCK-PZ, but pancreozymin was found to be the same as CCK, so another possible pronunciation crisis was averted.

Other areas under the influence of CCK secretion include the closure of the pyloric sphincter to prevent reflux, inhibition of gastric motility so gastrin production slows down, plus the stimulation of peristaltic movement in combination with the hypothalamus, for the small and large intestines.

CCK has been found in the brain in two different forms, one has 8 amino acids, whereas the main CCK in the brain acting as a neurotransmitter has 58 amino acids. It produces a sense of fullness for the person after eating. Indeed, low levels of CCK have been linked to the development of Bulimia nervosa, whilst the reduction of appetite in the aging process is linked to increased CCK secretion or even an acquired sensitivity to this peptide hormone.

Natural treatments in this sphere include:

- Milk Thistle seed liquid extract to promote the hepatic production of bile
- *Withania* to act on the hypothalamus
- Homeopathic CCK D30
- *Gentiana lutea radix* – 2 mls twice daily
- Increased daily water intake
- *Carica papaya fr* for duodenal integrity
- *Ganoderma*
- *Lentinus*

Iris & Sclera Signs to check for include:

- Yellow shimmer in the sclera
- Brown pigment - topolabile
- Punctate pigments throughout ciliary zone (Ferrum chromatosis)
- Duodenal embryological topography at 195º to 210º in the internal border of the collarette of the right iris with a crypt or lacuna attached
- Central heterochromia with restricted collarette
- Gall Bladder embryological topography at 318º in the right iris
- Partial zig-zag of the collarette over classical spleen topography at 20' in left iris
- Transparent Corneal Arcus featured in left and/or right irides from 180º to 290º only

Meerschaum Collarette

Here we have a bright, shimmering haze around the full circumference of the usually hypertrophic collarette, with the Meerschaum sign, as indicated by Dr Anton Markgraf, Joachim Broy & Rudolf Schnabel.

In the lymphatic iris the entire pupillary zone and collarette is very milky-white. In the Mixed Iris then we have a brighter central heterochromia.

There can often be what appears like the trail of a distress flare or radiating spokes of light emitting from the edge of the collarette

piercing throughout the ciliary zone to the iris limbus.

With a Meerschaum, I have found that there can be profound alterations of the gastrointestinal hormones such as the gastrointestinal peptides like vasoactive intestinal peptide (VIP), which regulates biological rhythms in the central nervous system, cholecsytokinenin (CCK), which helps to control hunger and is secreted into the duodenum in the presence of fats or amino acids, causing the gall bladder to contract and release bile and stimulating secretion of pancreatic enzymes; bombesin which regulates temperature control of the stomach and duodenum via communication with the hypothalamus, somatostatin which regulates growth in the body and gastrin which is secreted in response to stimulation of the vagus nerve and distension of the stomach and acts to break down proteins by stimulation of parietal cells to secrete hydrochloric acid and intrinsic factor.

Gastrin increases gastric motility and stimulates secretion of insulin, glucagon and secretin. There can be many gastrointestinal hormonal interactions with our energy levels, blood sugar balance and fat metabolism.

German research mentions that there may be gastric acidity & enzymatic changes, arterioscleriosis, anaemia, lymphadenopathy, kidney disturbances and general energetic stomach and intestinal imbalances apparent within the medical history of the patient. Food intolerances and allergies of a psychological beginning may be present, especially when accompanied by a dynamic sign at Space 7 on the Inner Pupillary Border.

Nutritionally Pineapple due to the bromelain content and Beetroot due to the Betaine hydrochloride enzyme content, plus botanical medicines such as *Althea radix, Curcuma longa, Ganoderma, Trametes, Filipendula, Artemisia vulgaris* & *Acorus calamus* are indicated, in addition to proper intake of magnesium, phosphorus and iron.

Vasoactive Intestinal Peptide or VIP

Vasoactive Intestinal Peptide (VIP) contains 28 amino acids and is considered not only to be a gastrointestinal hormone, but a neurohormone too. This dual consideration is made due to the fact that VIP does not rely on the intake of food to trigger its secretion. Indeed it is secreted via D cells along the entire length of the gastrointestinal tract. VIP inhibits gastric acid production, but stimulates endocrine and exocrine secretions of the pancreas.

Deficiency

VIP will also relax smooth muscles, thus reducing intestinal cramping. Problems with or quantities of VIP can be involved with spasmodic bowel conditions, such as Irritable Bowel Syndrome, Colitis or food intolerance. Some researchers have looked at how recurrent antibiotic users have lower levels of VIP secretion. VIP has a symbiotic relationship with probiotics, or *friendly intestinal flora*.

Iridology profiles for VIP include:

- Whitened zig-zag collarette. VIP takes precedence in any consideration of the zig-zag collarette
- Diffuse straw-yellow heterochromia
- 355º to 5º with a Globular morphology on the frontal IPB, or Space 1, the topography along this structure for the hypothalamus. *Neurolappen* can also occur.
- Multiple crypts in the pupillary zone
- Double Collarette

VIP Excess

Rare tumours that contain VIP secreting cells are called VIPomas. They are usually found in the pancreas and medically referred to as Werner-Morrison Syndrome. The symptom picture includes decreased gastric acid secretion, hypotension, loss of bicarbonate ions resulting in acidosis, relaxation of the gastrointestinal smooth muscle, excessive pancreatic secretions and excessive water-like diarrhoea induced by the intestinal relaxation and compromise of the digestive enzymes. In some cases this condition can be fatal. Urgent treatment is required, usually through chemotherapy agents to reduce the size of the VIPoma. From the herbal medicine perspective the following are indicated in all cases:

- *Vinca*
- Injectable *Viscum* – Iscador
- Hydrogen peroxide therapy according to some South African authorities
- *Larrea tridenta herba*
- *Coriolus versicolor*
- *Ganoderma lucidum*
- *Lentinus edodes*
- *Geum urbanum radix/herba*
- Probiotic supplementation with Bio-Acidophilus™

Substance P

Substance P is secreted by the enteric neurons in the small intestine. CCK and serotonin stimulate its secretion. It consists of 11 amino acids and is widely distributed throughout the intestines and the brain. Substance P has the honour as being the first hormone identified in both areas of the body. It really is a diffuse endocrine agent throughout the full length of the gut and the brain tissues. It stimulates secretion of saliva, increased intestinal motility, thus requires adequate fluid, and, also secretion of pancreatic enzymes.

It is considered unlikely that Substance P of gastrointestinal origin enters the systemic circulation, but neurologically derived substance P probably does, where it exerts largely unknown systemic influence on our functional capacities. We can consider the existence of substance P as scientific confirmation of the psychoneuroendocrine axis.

Elevation of Substance P can be indicated in many inflammatory bowel conditions such as Ulcerative Colitis and diverticulitis.

Iridology Signs:

- IPB – Neurolappen or Nerve Rags, singular or multiple hypertrophic flaps of the Inner Pupillary Border anywhere on the IPB can be a sign for alterations in any neurohormones such as Substance P, enkephalin or VIP

- Mammilations - Transient
- Stress Axis
- Collarette Structures – Local interruption
- Zig-Zag Collarette

Therapeutic Protocols for Substance P equilibrium include:

- Prolactin D30
- Melatonin D6 to D30
- Tryptophan D6 to D30
- *Curcuma longa*
- *Grifola frondosa*
- *Gymnema sylvestre*
- *Vaccinium myrtillus*
- Licorice root Tincture
- Pineapple - Fresh
- Papaya - Fresh
- Guava - Fresh
- Kiwi - Fresh
- Beetroot – Raw or Fresh juice
- Burdock root – cooked

Motilin

The EC cells in the duodenum secrete Motilin, when levels of alkalinity are high. As its name suggests Motilin increases the stimulation of intestinal motility. A lack of foodstuffs in the duodenum can also trigger its secretion. Motilin is found in the brain too. In iridology we have no correlations to date, due to specialised medical measures for testing levels of secretion and no obvious patterns of signs in the six years of research.

Pancreatic polypeptide

The F cells in the Islets of Langerhans of the pancreas are the main sites for secretion of the Pancreatic polypeptide. This secretion is stimulated due to the presence of proteins in the stomach or low blood sugar. Pancreatic polypeptide retards the absorption of food due to contraction of the gall bladder and inhibition of pancreatic enzyme secretion.

Iris Signs to be aware of:

- Swathes of orange pigment throughout the ciliary iris
- Orange central heterochromia
- Indentation of the collarette at 40’ in the right iris (Gall bladder & pancreas differentiation)
- Giant, Leaf, Closed or Double Lacuna attached to the external border of the collarette in the classical topographies for the pancreas at 10’, 20’, 40’ or 50’ in the right and left irides
- Embryological topography for the pancreas at the internal border of the collarette
- Zig-Zag Collarette

Bombesin

Bombesin is another peptide secreted by the duodenum and also the P cells in the stomach. It stimulates the release of gastrin and is triggered through the avoidance of food or through fasting. Again, we have no iridological correlations so far, although a ventral distension of the collarette could be a possibility for you to explore in your practice.

Enkephalin

Like Substance P, enkephalin is secreted by the enteric neurons of the small intestine in the presence of largely unknown influences. Enkephalin inhibits the intestinal peristalsis and digestive secretions. Some endocrine and gastroenterological authorities believe that the function of the hypothalamus has a large role to play in the balance of enkephalin secretion in the small intestine, as it is our hypothalamus that is constantly monitoring and controlling the peristaltic action of the Enkephalin secretion, and, levels are often out of balance in Crohn’s disease. The pancreas can also have its secretions inhibited via the presence of enkephalin.

Iris Signs to observe:

- Solitary orange or ochre pigment in the topography for the hypothalamus at 360º in either right or left iris
- Introflession of the collarette between 320º to 360º in the right iris and/or 0º to 40º in the left iris
- Crypt, defect sign or a solitary pigment of small diameter at 180º in the embryological topography for the hypothalamus or the classical topography for the jejunum, adjacent to the pupil and around mid-distance from the collarette. During my lectures and courses around the world I am always quizzed with great fervour, on which pigment practitioners should look out for in this location and it is a difficult question to answer, as the research has concluded we have three or four pigments which share the same frequency of incidence. The colours include yellow, salmon pink, orange or light brown
- Thickened or hypertrophic collarette structure between 220º to 320º in the left iris only – we can relate this to the classical and embryological topography of the ileum
- Zig-Zag collarette in some cases

Neurotensin

Secreted by the N cells in the small intestine in the presence of intestinal fat. It stimulates local gut motility, secretion and also immune responses. Thus we have a symbiotic relationship between endocrine and immune systems.

Iris Signs to observe for include:

- Hypertrophic Collarette (usually misshapen) with Zig-Zag structure
- Presence of the Immune Axis
- Indentation of the collarette at 315º to 320º in the right iris, pushing on the embryology of the liver. We could also have an indentation adjacent between 45º and 50º

Enteroglucagon

Secreted by α cells in the stomach and L cells in the colon due to the presence of glucose and fat in the stomach. Enteroglucagon reduces gastric acid secretion and gut motility. We need to observe for restricted collarette structure accompanied with central heterochromia.

Peptide YY

PYY cells in the colon secrete Peptide YY in the presence of intestinal fat. It inhibits gastric motility and acid secretion. With this in mind it is interesting to learn that Peptide YY is elevated in both cystic fibrosis and coeliac disease.

From a naturopathic or homotoxicological perspective we need to have knowledge of the acid-alkaline base in iridology as suggested by Italian iridologists such as the late Siegfried Rizzi and Dr Silvano Sguario.

The Matrix Regulation work of Pischinger applied to Iridology by Josef Angerer and his contemporary Franz Kohl in Germany, plus exhaustive work from Willy Hauser and his contemporary Claus Jahn can be appointed here too.

Dr Etienne Callebout also has theories on the foundational acid-alkaline terrain of the human body in health and disease, particularly the development of various cancers. What we would expect in this field is not always what occurs in reality. Etienne's theories are based on practical experience plus advanced blood profiles, iridology, urine tests and microscopic examinations of various kinds.

Therapeutic Protocols for the balance of Peptide YY include:

- Nux Vomica Hommacord™ (Heel)
- Lymphomyosot™ (Heel)
- *Coriolus versicolor*
- *Berberis vulgaris cortex*
- Liquid Oxygen
- Essential Fatty Acids

Iridology profiles for Peptide YY, in addition to Matrix Regulation & Acid/Alkaline Base Signs:

- Absent Collarette – either local interruption or complete atrophy
- Multiple crypts and defects in both the ciliary and pupillary zone

Insulin & glucagon

The pancreas secretes these two very important peptides and their roles are covered in the chapter on *Diabetes Mellitus, Iridology & the Endocrine System* in this book.

Conclusion

In this field we have the need for further research, as we are starting to chart new territory in this particular aspect of iridology. We can only consider this to be the beginning.

The main iris sign we need to consider in regard to most gastrointestinal hormonal peptides that have the ability to act as neurotransmitters and modulators, or neurohormones is the zig-zag collarette (refer to page 62 to 63 in *Immunology & Iridology*).

Remember that the gastrointestinal hormones and peptides act as neurotransmitters and neuromodulators, so we have to be aware of psycho-emotional factors and the activities of the psychoneuroendocrine system in conjunction with the immune system of the individual with any of these signs.

The activity of the gastrointestinal endocrine system must be highly coordinated in order to prevent erosion of the intestinal mucosa by the digestive enzymes. Indeed the gastrointestinal system's pivotal role in immunology, digestive health, mood, energy levels, nutritional absorption and assimilation plus hormonal potential is only as good as the cohesion of the diffuse gastrointestinal endocrine system.

General Therapeutic Protocols

- Water Therapy
- Vegetarian/Vegan Diet
- Avoidance of refined flours and sugar as much as possible
- Minimal alcohol intake
- Avoidance of MSG & Aspartame
- Avoidance of smoking
- Digest-aid Tonic™

Endocrine adaptogens:

- *Eleutherococcus senticosus radix*
- *Paeonia lactiflora radix*
- *Angelica sinensis radix*
- *Ganoderma lucidum*
- *Cordyceps*
- *Schisandra sinensis fr*
- *Lentinus edodes*
- *Astragalus membranaceus*
- *Vitex agnus castus*
- *Pfaffia paniculata radix*
- *Arctium lappa radix*
- *Turnera diffusa herba*
- *Sutherlandia frutescens herba*

The Site of Secretion, Stimuli for Secretion, and Actions of the Minor Gut Peptides

Gut Peptide	Site of Secretion	Stimulus for Secretion	Action of Peptide
Enteroglucagon	A cells in the stomach and L cells in the colon	Presence of glucose and fat in the stomach	Reduces gastric-acid secretion and gut motility
Bombesin	P cells in the stomach and duodenum	Fasting	Stimulates gastrin release
Motilin	EC cells in the duodenum	Absence of food in the duodenum	Speeds gastric emptying and stimulates colonic motility
Vasoactive intestinal polypeptide (VIP)	D1 cells and neurons in the small intestine and colon	Gut distension	Stimulates local gut secretion, motility, and blood flow
Peptide YY (related to pancreatic polypeptide)	PYY cells of the colon	Presence of intestinal fat	Inhibits gastric motility and acid secretion (peptide YY is elevated in coeliac disease and cystic fibrosis)
Substance P	Enteric neurons in the small intestine	Cholecystokinin (CCK), 5-hydroxytryptamine (5-HT)	Stimulates gut motility, secretion and immune responses; may have a role in inflammatory bowel disease
Enkephalin	Enteric neurons in the small intestine	Unknown	Inhibits gut motility and secretion
Neurotensin	N cells of the small intestine	Presence of intestinal fat	Stimulates local gut motility, secretion, and immune response

Diabetes Mellitus, Iridology & the Endocrine System

Diabetes mellitus (DM) can be classified as two distinct types. The first insulin dependent Diabetes or Type 1, the second is Type 2, which is usually termed Adult onset Diabetes. Type 1 can also be referred to as juvenile-onset Diabetes. In general Diabetes is a multisystem disease of an abnormal metabolic state and characterised by elevated blood sugar, or *hyperglycaemia*, due to disruption of insulin secretions and activity. In the UK 2% of the adult population have Diabetes mellitus.

We have a growing epidemic across all ages with Diabetes in the western world. It is becoming an alarming trend in infants and juveniles, plus adults. We have lots of both conventional and alternative literature available on DM now. It is probably one of the most well-known and recognised endocrine conditions; therefore, I only intend to cover the pertinent points and rarer perspectives in this chapter.

Type 1 Diabetes is now known as an autoimmune disease, where antibody-mediated destruction of the β cells in the Islets of Langerhans occurs situated throughout the pancreatic body. Elevated levels of white blood cells infiltrate and destroy the insulin-secreting β cells in the Islets of Langerhans. This autoimmune reaction has been linked to genetic tendency, viral infections such as Coxsackie B, measles, mumps or hepatitis; and even, routine vaccinations. In the early 1990s an epidemic of juvenile-onset Diabetes was triggered by a mass Hepatitis B vaccination campaign, as discussed in *Immunology & Iridology*.

Type 2 or adult-onset Diabetes can have a genetic tendency bias, as we can identify through the application of Iridology. It is generally caused by long-term improper lifestyle factors such as poor diet, malnutrition, chronic dehydration, high alcohol and caffeine intake and a lack of exercise. The diet usually includes high levels of saturated animal fats, refined sugars, processed foods, microwaved food, artificial sweeteners, carbonated drinks and refined carbohydrates such as white bread. Type 2 Diabetes is a lot easier to correct from a naturopathic perspective, than Type 1 DM.

Other causal factors with DM Type 2 is insulin resistance, where the tissues and cells are unable to respond to insulin due to a compromised function of insulin receptors on the target cell surfaces.

Long Term Complications in Diabetes

Long-term complications of DM are legion. They are considered inevitable long-term consequences of the disease process, but they could also be due to the long-term pharmacological treatment of such condition too.

Complications include:

- Hypoglycaemia due to complication of over-treatment with insulin leading to Diabetic coma
- Ketoacidosis common in Type 1
- Lactic acidosis
- Diabetic nephropathy – renal disease
- Diabetic retinopathy – retinal disease and other eye conditions
- Increased susceptibility to infections of the skin and systemically
- Diabetic neuropathy – peripheral nerve pain or nerve damage
- Diabetic microangiopathy - vascular disease
- With the vascular disease we can see the development of ischemic heart disease, cerebral ischemia, diabetic gangrene on the feet, multiple renal lesions, impotence and ulcers

Growth Hormone, Adrenaline & Cortisol in Diabetes

Both Growth Hormone and cortisol secretions facilitate glucose production and limit glucose utilisation, but neither of them plays a critical role. Their effects are not immediately noticed, as they take up to six hours to exert an influence. They are mostly involved in the prevention of prolonged hypoglycaemia. We can identify the importance of both impeccable hypothalamic and adrenal functions in the prevention of diabetic developments.

Cortisol contributes to the regulation of gluconeogenic substrate through the lipolytic action of catecholamines such as adrenaline and GH in adipose tissues, plus the glycogenolytic action of catecholamines in skeletal tissues. In addition, it improves the glucagon and adrenaline balance in the liver in reference to blood sugar control. When adrenaline is released in response to stress the secretion and action of insulin is inhibited. Growth Hormone released at night reduces cellular sensitivity to insulin.

The Five Potential Ocular Changes in Diabetes mellitus

1. Background retinopathy

2. Proliferative retinopathy due to vitreous haemorrhage or retinal detachment

3. Maculopathy caused by oedema or hard exudates

4. Cataract formation as evidenced below. All cataracts can be more prevalent in Diabetics

5. Increased Glaucoma incidence in Diabetics due to Rubeosis iridis or neovascularization of the iris

Embryology of the Pancreas

The pancreas begins to form at thirty days in gestation from endodermic tissues. Two buds derived from the foregut make the pancreas – the dorsal bud forms the majority of the pancreas, whilst the ventral bud rotates behind the duodenum, along with the bile duct, to lie posterior to the dorsal bud. This smaller ventral bud forms the uncinate process as it fuses with the larger dorsal bud. The duct of the dorsal bud may persist as the accessory duct. By the seventh week in gestation this process is complete and the pancreas becomes active.

Anatomy of the Pancreas

The pancreas is a long flat organ with four sections:

- Head
- Uncinate process
- Body
- Tail

The pancreas is considered a retroperitoneal structure situated between the duodenum and spleen. It lies on the posterior abdominal wall and is to the front of the aorta and inferior vena cava. A clinical consequence of the bile ducts positioned posteriorly is that when a swelling or tumour in the head of the pancreas occurs, the gall bladder and bile ducts can become blocked. The pancreatic body and tail passes over the left kidney pole and aorta, whilst the stomach is positioned frontally. The tail of the pancreas crosses the left kidney to touch the hilium of the spleen.

The main controls of the endocrine functions of the pancreas are hormonal via the coeliac plexus and splanchnic nerves. Lymphatic drainage from the pancreas is via the preaortic lymph nodes. The pancreas gleans its blood provisions from the branches of the splenic artery. Blood drains from the pancreas into the splenic vein and the hepatic portal vein.

Fasting glucose levels are between 3.5 – 5.5 mmol/L

Hyperglycaemia is diagnosed if fasting level concentrations are >7.8 mmol/L

Hypoglycaemia concentration is <2.5 mmol/L

The pancreas contains both endocrine (hormonal secreting) and exocrine (enzyme secreting) tissues. The endocrine cells are arranged in spherical clusters called Islets of Langerhans within the exocrine tissue. The four types of endocrine cells are:

- 70% are insulin-secreting β-cells
- 20% are glucagon-secreting α-cells
- 8% are somatostatin-secreting δ-cells
- 2% are pancreatic polypeptide-secreting F-cells

Insulin and glucagon regulate blood glucose levels. Somatostatin inhibits the release of insulin and glucagon. Pancreatic polypeptide inhibits exocrine or enzymatic functions of the pancreas.

Insulin

The hormone insulin promotes the assimilation, storage and balanced use of glucose. Its secretion from the pancreas occurs when blood sugar levels (blood glucose) rise after a meal or due to stress. Although meal times and stress can subside and change, an insulin level is always maintained within the blood and the brain. If blood levels drop too low the brain is starved of energy - this is medically known as a hypoglycaemia. If the blood sugar levels remain high this is referred to as hyperglycaemia and blood glucose levels become toxic leading to Diabetes. Blood glucose levels are rigidly con-

trolled in narrow band in an attempt to avoid either possibilities. The pancreas joins forces with the adrenal glands, hypothalamus and liver to maintain the equilibrium.

Diabetes mellitus in Iridology

We are indebted to many great German, Italian and Russian researchers spanning five decades, in regards to Diabetes:

- The mapping of the pancreas in the iris
- Locating the pancreatic innervation on the Inner Pupillary Border (IPB)
- Diabetic signs in the pupillary lumen

Diabetes manifestations in the sclera and conjunctiva

- Collarette Dynamics
- Differentiation of Lacunae and Pigments

Many influential and inspiring iridologists have been involved in this process including Rudolf Schnabel, Josef Angerer, Gunther Jarosyck, Josef Deck, Willy Hauser, Dr Anton Markgraf, Dr Kabisch – all from Germany, plus Dr Velchover from Russia, Dr Aleiev from Azerbaijan, and then Rizzi, Ratti & Lo Rito from Italy.

Gunter Jarosyck published the classical topography of the pancreas in the 1960s in Germany. The pancreas is positioned in both the right and left iris at 10', 20', 40' and 50' on the external border of the collarette. The majority of signs do occur in the 20' and 40' locations, but these are not exclusive. I find these to be an incredibly reliable reference for the pancreas and its many tendencies. Many authors have added to this understanding.

The embryological topography for the pancreas based on research between 1999 and 2003 in the UK sees the pancreas' initial embryonic locations on the internal border of the collarette at the same 10', 20', 40' and 50' points in each iris. Except for 20' in the left iris and originally 50' in the right iris, although this last option has been revised and included.

Dr Daniele Lo Rito in Italy suggested the pancreas topography of the Inner Pupillary Border after research from 1990 to 2000. The pancreas has been located on the IPB in both the right and left irides at 99º to 104º & 259º to 264º. Again, this topography proves to be extremely reliable. Like the adrenal glands, as stated previously, the pancreas provides and mounts consistent iris signs that are easy to assess and identify.

Topography of the Pancreas

Classical –	Jarosyck
Embryological –	Andrews
IPB –	Lo Rito

Modern Understanding of Pancreatic Functions

Previously the exocrine and endocrine pancreas was distinguished on many iris charts in many countries, but with the modern study of endocrinology and understanding of functional research we now know that both exocrine and endocrine activity can take place throughout the pancreas, thus it proves extremely difficult to attempt at distinguishing between the two compartments topographically. All areas should be referred to as the pancreas and our modern understanding should be applied to clinical practice as far as possible.

Diabetes has been considered a disease of the endocrine pancreas, whilst pancreatitis is considered a disease of the exocrine pancreas.

General Iris Signs in Diabetes

Gigantic or Giant Lacuna

This lacuna really lives up to its name – it is a large lacuna usually covering the distance between the collarette border and almost the iris limbus. More often than not, it is located with its tip in any of the four classical topographies for the pancreas in either iris. This type of lacuna is topolabile for the pancreas and family history of Diabetes.

According to Schnabel and subsequently documented by Angerer, Markgraf, Jarosyck, Rizzi, Ivaldi, Di Spazio, Aleiev, Gazzola, Deck, Arcella, Ypma & Lindemann, the Gigantic lacuna shows a family history of and tendency to Diabetes mellitus. I have seen nothing clinically to disagree with these authorities. It is an extremely reliable marker for genetic history of Diabetes that may go back up to five generations.

According to Birello & Lo Rito in 2004's *Manuale di Iridologia di Base* the Gigantic lacuna can also relate to faulty metabolism of carbohydrates.

Vascularised Collarette

The vascularised collarette, that is a collarette containing prominent blood vessels, illustrates diabetic complications of arterial circulatory changes leading to cardiac insufficiency. Bioflavanoids are required such as rutin, lycopene, quercetin or catechin to counter this situation. Co-enzyme Compositum is also of enormous benefit.

Loosened & Hypertrophic Collarette

This generally distended structure indicates a tendency to Diabetes (genetic), pancreas insufficiency or dyspepsia according to Wenske & Rehwinkel. Such a collarette may have pancreatic lacunae inside, which we now know to be an embryological sign.

Orange Pigment & Crypt/Lacuna

Velchover says if we have a lacuna or crypt (structural sign) underneath a pigment or swathe of pigment, then we have a definite DNA alteration and functional damage to that organ or gland genetically. We can convey that the pigment is acting as a protective shield.

Lacuna with the collarette, where the collarette is broken is a serious sign, usually seen with the pancreas. It is also observed with cardiac complications.

I would like to add that complications are possible with this type of lacuna and diseases of the pituitary, lungs, gall bladder and Pineal.

Orange Pigments

Orange pigment patches within the iris relate to pancreatic and hepatic functions. Especially in relation to the balance of blood sugar levels. A family history of Diabetes mellitus, dysglycaemia or hypoglycaemia is a certainty. With orange in the iris think pancreas!

The liver, adrenal glands, thyroid gland, growth hormones and the pancreas - insulin, regulates sugar metabolism; so the functions of all these endocrine glands come under focus. Rusty orange pigment brings attention to the glucose balance.

Orange pigmentation is a topolabile sign, significant for the pancreas, independent of location, although a pancreatic topographic correlation enhances that significance. According to Günter Jarosyck latent blood sugar disturbances can be reliably located at the pancreas head location in the right iris at 35-40'. Ochre coloured pigment indicates a connection between spleen and liver. Often allergies and medicinal reactions are observed with ochre markings.

According to studies published in Volume 2 of the Advanced Iridology Research Journal September 2002, an orange heterochromia within the stomach and/or intestinal zones can indicate issues of betrayal, especially in connection to the parent relationships. With pancreatic pigments Anorexia nervosa, Bulimia, self-esteem, sexuality and love issues can all be indicated.

When the orange heterochromia is combined with a pancreatic pigment @ 20' with thyroid lacuna then the spleen-pancreas and stomach meridians can have energy blocks.

The organs and glands with the highest frequency of pigmentation and granulations:
(in descending order)

1. Intestines
2. Stomach
3. Lungs
4. Medulla oblongata/Hypothalamus
5. Duodenum
6. Adrenals
7. Pancreas

* From epidemiological iridology study on iris pigment by Velchover, Romashov, *et al*

Double orange/ochre pigments

These are often side-by-side and indicate an endocrine pancreatic disturbance tendency. Blood sugar level balance is the key focus with orange pigments. If the blood sugar levels lack equilibrium then a multitude of symptoms can manifest. These include depression, panic attacks, anxiety, low libido, hot sweats, lethargy, thirst, irritability, palpitations, hyperactivity, Diabetes, hypothyroidism, insomnia, nausea, *Candida albicans* overgrowth, abdominal bloating, vertigo, poor concentration, memory loss, impatience, epilepsy, breathlessness, sugar cravings, coma, tinnitus, shakiness, fatigue, antisocial behaviour, alcoholism and other addictions.

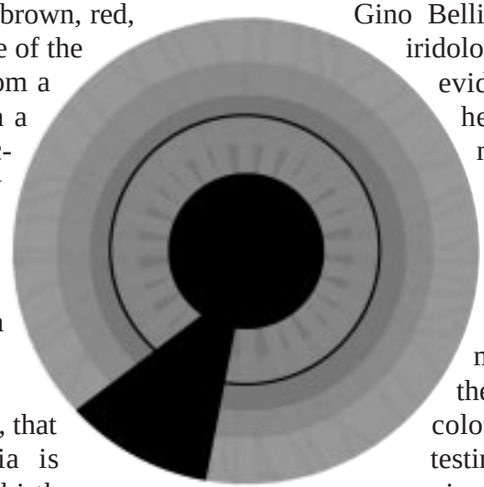
As a general nutritional guide with pancreatic pigments sugar, artificial sweeteners, caffeine, high protein foods, processed foods, white flours and salt should be avoided. Whilst sufficient levels of chromium, magnesium, copper, manganese, calcium and zinc-rich foods should be present in the diet. Please see Advanced Iridology Research Journal Volume 3 & 4.

Diffuse orange pigments located just under the iris stroma have been linked to the development of adult-onset Diabetes in recent times. This Type II thrust has been connected with a high consumption of caffeine in certain countries such as Sweden.

Double orange pigments in the left temporal cardiac topography suggest the tendency to heart and circulatory complications in Diabetes mellitus, for example with blood pressure and liver congestion leading to hyperlipidaemia.

Sectoral Heterochromia

The term *sectoral heterochromia* means a section of colouration within the iris. The colour or pigment can be brown, red, yellow or orange. The size of the pigmentation can vary from a few degrees to more than a 1/3 of the entire iris. A sectoral heterochromia really stands out against the background of the pigment in the basic constitution. It tends to be a genetic marking.



Sectoral Heterochromia

It must be noted, however, that a sectoral heterochromia is most often linked to birth defects or damage within the womb. It is an embryological marking, which remains from the formation of pigmentation in the iris *in utero*. The iris blood vessels maintain the blood-aqueous barrier, sometimes leakage from the blood vessels occurs whilst in the womb for various reasons. The blood carries pigments that can flood an area leaving a heavy section of colour. Due to this very reason the sectoral heterochromia is seldom a clinical manifestation.

However, it is valuable to have the awareness that sectoral heterochromia has been linked to several situations. Its significance depends on the general colour and location. For example, a sectoral heterochromia arising from the zone for the gall bladder and the liver indicates dyscholia and imbalance within the biliary system.

Orange sectoral heterochromia can sometimes be linked to family history of Diabetes mellitus.

Gino Bellinfante, a naturopath and iridologist from Montreal, has evidenced that the sectoral heterochromia indicates malabsorption of vital minerals.

Central Heterochromia

A genetic marking of pigment located throughout the pupillary zone. The discolouration of the gastrointestinal zone is easily recognised and its meaning can depend on its colour. In tradi-

tional Iridology a central heterochromia is said to denote a toxic colon and in recent years, *Candida*. A study of patients in England with medically confirmed *Candida albicans* overgrowth found no statistical correlation between a central heterochromia and *Candida* – refer *Advanced Iridology Research Journal, Volume 5, September 2004.*

With a *bright* orange central heterochromia there is an increased degree of predisposition to erratic blood sugar balance that could lead to Diabetes Type II. Indeed, if we explore the genetic medical history we could find DM venturing back 4 or 5 generations.

An orange central heterochromia can also show the experience of emotional betrayal in the family history or for that individual with such an iris display.

Local Indentation of the Collarette

- Pancreatitis when located @ 20' or 40' in either right or left irides. Also consider possible autoimmune conditions such as hepatitis, Primary Biliary Cirrhosis, Diabetes or Pernicious Anaemia.

It is well-established that patients with a zig-zag collarette have decreases in intestinal and cerebral hormonal secretions when under stress or the immune system is challenged leading to decreases in Substance P, pancreatic secretions, gastric acid, somatostatin which influences Growth Hormone & VIP, which influences the Gut Associated Lymphoid Tissue and pancreas.

Squared Collarette

A squared collarette is not exactly a true square, but the collarette does take on a square-like appearance with each corner @ 10', 20', 40' and 50' having a less rounded structure. A squared collarette indicates a family history of Autoimmune Diabetes mellitus with destruction of the beta cells in the pancreas. Although in the family history, it may not manifest in the patient under examination and they may have a tendency to hypoglycaemia or erratic blood sugar levels with dysglycaemia.

Other physical concerns with this type of collarette structure which tie in with the blood sugar indices include compromised adrenal function (check for pupillary changes), anxiety syndromes, poor absorption of nutrients plus alterations in the Mucosa Associated Lymphoid Tissue (MALT) and alterations in the Hypothalamus-Pituitary-Adrenal axis (HPA).

It is interesting to note that patients with this collarette structure have a tendency not to absorb what people are saying to them. They can be belligerent and non-compliant from a therapeutic perspective and generally have difficulties altering negative aspects of their lives. They like to complain, but can often do seldom little to positively change things. In such cases Colourpuncture protocols to free up the internal energies and erode "Therapy Resistance". On the positive side some individuals' with a squared collarette have a tremendous capacity for love, understanding & empathy with people

Bridge

The Bridge appears on the collarette, it can be either a break in the collarette with two distinct margins or on either internal or external borders of the collarette, it has a lot of depth and is very dark. You can imagine placing a finger under one sectorally swollen section of the collarette and the same finger manifesting on the other side of the collarette, like a button hole (although please note that the bridge is a very different structure to the button hole morphology on the IPB).

The bridge can be a Time Risk sign, according to Lo Rito, suggesting a precursor to stress-induced degenerative disease - a Dirk-Hamer Syndrome. The bridge can also be present in Haematogenic or Mixed Biliary irides with Autoimmune Diabetes and also generally in Leaky Gut Syndrome, which could lead to food intolerance, allergies, irregular inflammatory responses, autoimmunity or intestinal dysbiosis.

Pupil Manifestations

A pupil with a green and hardened shell appearance indicates glaucoma. Please note that the IPB is not usually present in glaucoma.

Cataracta diabetica

This can look similar to standard cataracts, but the spots are larger in diameter and are duller with a slight tinge to them. If you see this sign in the pupil and the patient is not aware that they are diabetic (which is unlikely it must be said, although I have seen this to be the case on a scarce occasion) then it is necessary for an instant referral to an Ophthalmologist.

Inner Pupillary Border & Diabetes

Yellow IPB

In some cases of Type 1 Diabetes mellitus, we can observe a distinct yellow tinge to the Inner Pupillary Border, even under the microscope. Whether this is due to insulin or general complications of Diabetes and the neuropathic aspect, I am not certain. Study numbers are too few to hazard a guess at this time.

Partial Atrophy

As we can see in many of the chapters within this book the Partial atrophic diameter of the Inner Pupillary Border is a very frequent structure in the eyes of those with endocrine-related conditions. The partial atrophy is frequently observed in diabetic patients.

Hypertrophy

Either a local or general hypertrophy of the IPB is a common manifestation in Diabetes mellitus according to Dr Vincenzo Di Spazio. I have witnessed that in Diabetes the IPB can be one extreme or the other – either partially atrophic or partially hypertrophic in diameter.

Sclera Signs in Diabetes mellitus

We are indebted to German documentation for these signs, such as the late and great Dr

Anton Markgraf in his book on the *Pankreas*. Recently, research by Emilio Ratti in Italy and Dr Mikhail Dailakis in Greece have added to the understanding of the sclera in Diabetes.

Porcelain vessel

Thickened wavy red vessel, usually temporally or frontally within the sclera. It is indicative of endocrine alterations, in relation to Diabetes mellitus, changes in the microcirculation, phlebitis and diabetic retinopathy. It could be inherited or acquired. The Heel formula Lymphomyosot has gained some recent positive results in relation to the treatment and management in diabetic neuropathy.

Diving Vessels

This is a prominent and thickened scleral vessel that suddenly terminates or appears to have dived deeply into the white of the sclera at a precise point. Dr Mikhail Dailakis states that this is a very important sign indicating complications in any given pathology. I would add to this by including such conditions as heart disease, hepatitis, Diabetes mellitus or epilepsy.

Tangential Vessels adjacent to Liver Reflex

Such vessels are located temporally and begin at approximately 270º in either iris. They are opposite the liver topographies. We can have one to three tangential branches, as named by Rudolf Schnabel and modernised by Dr Anton Markgraf. They are of various thicknesses, but are a bright scarlet red. Brown pigments in the iris adjacent to this sign indicate liver complications in Diabetes mellitus and subsequently elevated cholesterol levels. A pancreatic lacuna or indentation of the collarette at 40' in the right iris or 20' in the left iris indicates the development of chronic adverse symptoms in relation to the Diabetes.

Honeycomb

– taken from *Iris & Pupillary Signs, 2nd Edition*

The Honeycomb structure within the sclera is instantly recognisable. With this type of vessel patterning we are presented with three clinical possibilities such as:

i) Sugar intolerance if the honeycomb vessels structure is defined, but not thickened. This type of sign can be a chronic indicator of ongoing high sugar consumption, which has not developed into Diabetes, or it can show that that individual has ingested refined sugar in some form, at sometime over the previous 12 to 16 hours. Basically, it is a sugar allergy or intolerance and the sign can fade after sugar is eliminated from the diet.

ii) Diabetes mellitus is the assessment if the honeycomb structure is very distinct, thickened and swollen. All aspects of the formation look heavy, solid and set deep in the sclera. This type of sign is indicative of Type 2 Diabetes.

iii) Herpes zoster (Chicken pox and Shingles) occurring in that individual or in the family history is marked by a honeycomb structure that is loose and slight. The vessels are a lot wispier and the honeycomb structure is not as defined as the previous two possibilities. This sign can also fade with the lessening of the shingles.

Sclera Summary

The two most important and reliable sclera signs in Diabetes are the Porcelain vessel and the Honeycomb structure.

Herbal *Materia Medica*

- *Gymnema sylvestre folia*
- *Momardica* (Karella or Bitter Melon can be used as a decoction, tea or a fresh vegetable to balance blood sugar levels)
- *Vaccinium myrtillus fr*
- *Vaccinium myrtillus folia*
- *Foeniculum vulgare semen*
- *Trigonella foenum-graecum*
- *Arctium lappa radix*
- Licorice root
- Milk Thistle seed
- *Gingko biloba*
- *Centella*
- *Hydrastis*
- Garlic
- *Coleus forskohlii*
- *Andrographis paniculata*
- *Guava*
- *Carica papaya*
- *Ficus*
- *Curcuma longa*
- *Phasoelus*
- *Urtica folia*
- *Fucus*
- Onions
- *Spirulina*
- *Ganoderma*
- Kidney Beans

Homotoxicology

- Leptandra Compositum
- Metatox No.4 Formula
- Metatox No.3 Formula
- K2F-DIA in females
- K2M-DIA in males (both these are indicated for Type 1 insulin dependent Diabetes. They regulate the sugar level through influence of the PNEI pathways. They are to be used alongside insulin treatment)
- Momardica 30D injection
- Lymphomyosot in regards to diabetic neuropathy, recent clinical trials are very encouraging
- Szygium Compositum

PHYTOTHERAPY FOR DIABETES AND THE KEY ROLE OF *GYMNEMA*

(compiled from the Internet)

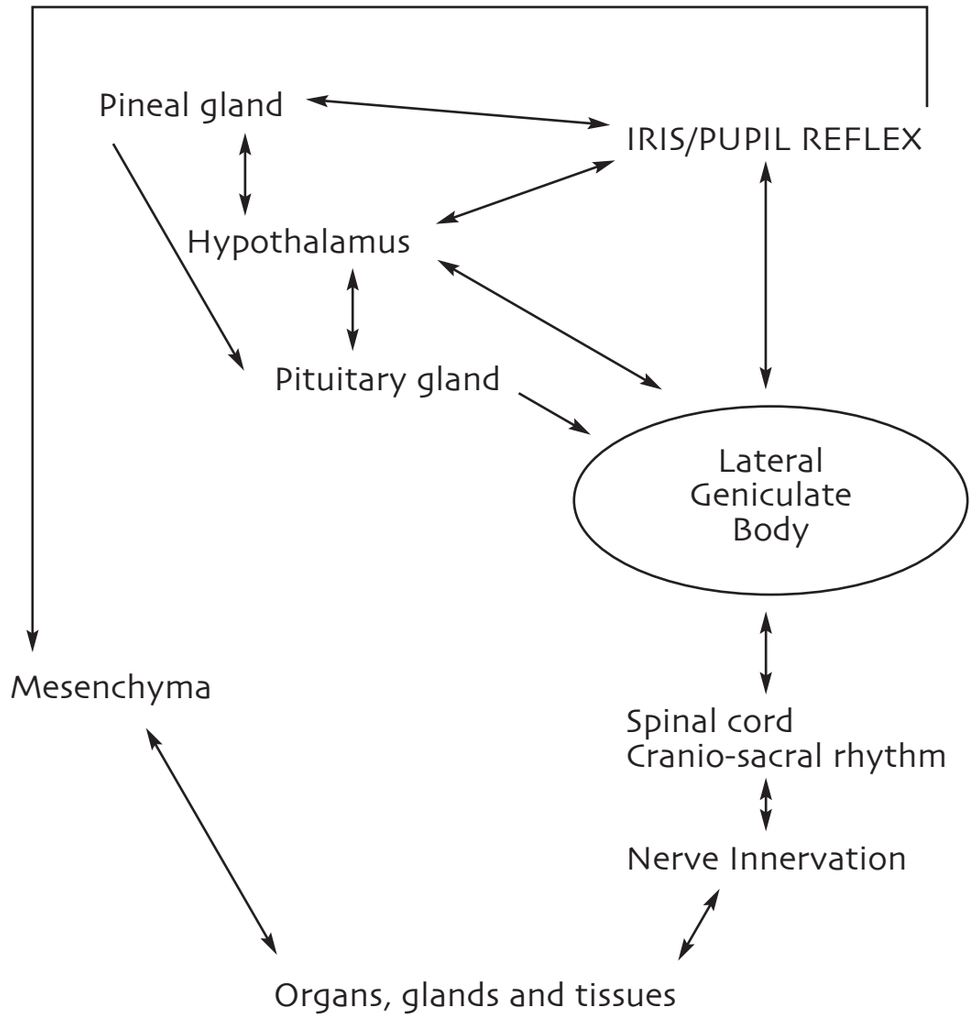
Kerry Bone writes about the role of *Gymnema sylvestre* and its importance in the improvement of blood sugar control and the reduction of the need for insulin or hypoglycaemic drugs. Other useful herbs in non-insulin-dependent Diabetes mellitus (NIDDM) are *Galega officinalis, Trigonella foenum-graecum, Momardica charantia* and *Ocimum sanctum*. The main use of herbal treatment in insulin-dependent Diabetes mellitus (IDDM) is to prevent the long-term complications, such as diabetic retinopathy, for which Bilberry (*Vaccinium myrtillus*), *Ginkgo biloba* and grape seed (*Vitis vinifera*) extracts are useful.

An amazing property of *Gymnema* is that of anaesthetising the sweet taste buds.

Clinical trials suggest that it may actually help to restore damaged pancreatic tissue. One controlled study on insulin-dependent diabetics found that a water-soluble *Gymnema* extract reduced insulin requirements by about 50%. Cholesterol and triglycerides were also reduced.

Other studies obtained similar results. *Gymnema* can also be used to treat reactive hypoglycaemia, sugar cravings, and weight loss. The latter is probably partly due to its action in disrupting sugar absorption in the small intestine.

Validation of Iridology



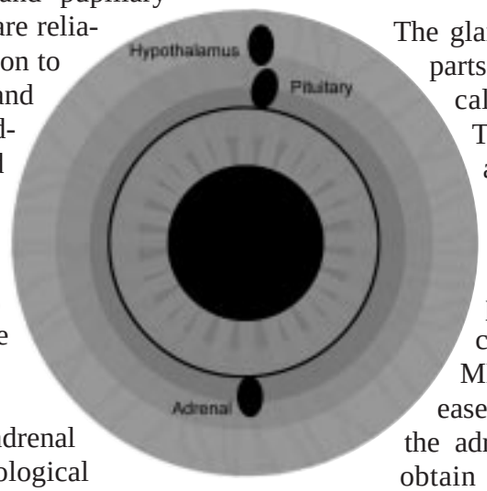
The Adrenal Glands in Iridology
An Endocrinological Perspective

The adrenal glands play a vital, albeit often unsung, role in our lives and are pivotal to our motivation, psychological and physical health. The adrenals are involved with monitoring and balancing hormonal levels, the response to stress, our motivation and drive, mood, inflammatory reactions, immune responses, blood sugar levels, allergic reaction and hypersensitivity, plus the balance of blood pressure, which often surprises many people.

The study of the iris and pupillary dynamics and structures are reliability personified in relation to accurate identification and analysis of adrenal gland-related or adrenal-based concerns.

In North America the adrenals are referred to as the suprarenals (i.e. above the kidneys).

The identification of the adrenal glands in the endocrinological approach in iridology is extremely important, as they constitute an integral member of the Hypothalamic-Pituitary-Adrenal axis or HPA axis. The HPA axis is fundamental for the equilibrium of immune, reproductive, endocrine and limbic systems, plus the individual response to stress.



Stress Axis

Adrenal Anatomy & Physiology

We have two adrenal glands, each situated on the upper pole of each kidney, enclosed within the renal fascia. They are about 4cm long and 3cm thick. The arterial blood supply to the glands is via branches from the abdominal aorta and renal arteries and the venous return is by suprarenal veins. The right gland drains into the inferior vena cava, with the left gland draining into the left renal vein.

The glands are composed of two parts that differ both anatomically and physiologically. The outer part is the cortex and the inner part is the medulla. The cortex is essential to life, whilst the medulla is considered dispensable, particularly in cases of adrenal adenomas, MENS or in Cushing's disease. The inner layers of both the adrenal cortex and medulla obtain a resource of partially deoxygenated blood, which contain the endocrine secretions of those parts of the gland, due to previously passing through these areas.

The adrenal medulla comprises 10% of the inner structure with the adrenal cortex accounting for 90% of the surface area. Although the two sections of adrenal glands

are independent, the influence and activity of one part unavoidably interacts with the other part because of the anatomy of their blood supply and nerve connections.

Embryology of the Adrenal Medulla & Cortex

Embryologically the adrenal medulla is derived from the neural crest of the ectoderm, thus the cells of the adrenal medulla are intimately related to nervous system cells. For evidence of this we simply need to look at the effect adrenaline release has on the nervous system. The ectoderm tissue links the medulla with the epiphysis or Pineal gland, epidermis, breasts, pigment cells, retina, inner ear, pituitary gland, olfactory neurons, the lens of the eye, plus both peripheral and central nervous systems.

The outer adrenal cortex is derived from mesodermic germinal tissues and is therefore related to the spleen, heart, connective tissues (you can see the link with Rheumatoid arthritis here), dentin, skeleton, cranium, testes, ovary, tongue, lymphatic cells and fluid, serous mucosa and the urogenital system.

The adrenal cortex and medulla both develop separately. The cortex appears initially as a thickening in the dorsal mesogastrium during the first 4 to 5 weeks *in utero*. It is slightly later that the medullary cells are derived from the neural crest via an adjacent sympathetic ganglion. Similar cells can be found scattered around the body, but these degenerate after birth. At first the cortical and medullary cells are intermingled, but then later arrange themselves accordingly, into their respective regions. The adrenal glands are between 10 to 20 times larger in the foetus, in relation to a size and body weight ratio than in adults, but they then assume the smaller size and space they eventually occupy in adulthood.

Adrenal Cortex

The adrenal cortex secretes three groups of steroid hormones:

- Glucocorticoids such as cortisol
- Mineralocorticoids such as aldosterone
- Androgens such as DHEA

The adrenal cortex produces these groups of hormones from cholesterol produced by the liver. They are small lipid-soluble molecules that have the capacity to cross-cellular membranes with ease. Once inside a cell these types of hormone can act on intracellular receptors in order to regulate gene expression and stimulate protein synthesis directly. The hormone and receptor enter the nucleus together, binding to sections of DNA in the process. Through these exchanges the effects of the hormone are exacted.

Glucocorticoids

Glucocorticoids, which include Cortisol (hydrocortisone) and corticosterone, are the main ones and are essential for life. Secretion is stimulated and controlled by ACTH from the anterior pituitary, Corticotrophin Releasing Hormone from the hypothalamus, and also, by stress.

In non-stressed situations secretion has marked circadian variations, therefore the adrenal glands have their own integral rhythm. ACTH is the adrenocorticotrophichormone and CRF is the Corticotrophin Releasing Factor, both are influenced via negative feedback. At times of stress the secretion of glucocorticoids is increased which causes other actions of these hormones to become apparent, such as an inhibition of normal inflammatory and immune responses.

Deficiency

A deficiency of glucocorticoids is characterized by an inability to deal with stress accompanied by hypoglycaemia, low blood sugar. The opposing result of this excess of hormonal activity leads to greater susceptibility to infection and the inducement of hyperglycaemia, which is partly triggered through usage of skeletal proteins.

Circadian Rhythm of Cortisol

Cortisol seems to be always present in the health media in recent years. The levels of cortisol are elevated constantly when we experience chronic stress. The normal secretion of cortisol demonstrates an inherent circadian rhythm. This cortisol timetable is supervised by and initiated in the hypothalamus. The highest levels of hormones occur between 4am and 8am with the lowest occurring between midnight and 3am. The peak levels of cortisol should be around 6am; with any salivary or urinary cortisol test we should see a natural, gradual decline of cortisol throughout the day.

If the sleeping/waking pattern is changed, it takes several days for the ACTH/cortisol secretion to adjust. This may be a factor in jet lag and in the difficulties experienced by some people when they change from day to night shift work and vice versa. We can see that this shares a similar situation to melatonin and the Pineal gland.

The Influence of Cortisol

Cortisol affects every cell in the body. It inhibits the production of cytokines and antibodies, raises sodium and water retention, stimulates lipolysis and increases essential fatty acid levels in the blood, increases the breakdown of proteins in skeletal muscle, skin and bone to release amino acids, inhibits allergic and inflammatory episodes due to the inhibition of phospholipase A2 enzyme that is essential for the production of prostaglandins from arachidonic acid.

In utero cortisol is responsible for an influence on foetal and neonatal neuronal development. It augments the actions of the sympathetic nervous system, plus the progression of cognitive and behavioural functions.

From an endocrine perspective elevated cortisol suppresses anterior pituitary functions and secretions of:

- ACTH
- Luteinising Hormone
- Follicle Stimulating Hormone
- Thyroid Stimulating Hormone
- Growth Hormone (in Cushing's syndrome this can retard normal rates of growth in infants)

Cortisol & Blood Sugar

Glucocorticoids, including cortisol, have an influence on blood sugar balance by regulation of carbohydrate metabolism, promotion of the formation and storage of glycogen, glucogenesis (formation of new glucose) from protein, raising the blood glucose levels, promotion of sodium and water re-absorption from the renal tubules.

The blood sugar level may be raised during stress by the process of gluconeogenesis. Here, the nitrogenous portion is removed from amino acids and the residue converted to glucose.

Immunity

Cortisol tends to decrease the number of eosinophils and lymphocytes in the blood, and to increase the levels of neutrophils. We need to be vigilant as practitioners for these connections appearing in blood test results.

In pathological and pharmacological quantities, glucocorticoids have an inflammatory action, suppress immune response, suppress the response of tissues to injury and can delay wound healing. Chronic use can lead to serious complications of the immune system, liver and kidney functions, plus lead to poor wound healing, susceptibility to infection or ulcerative developments in the gastrointestinal system.

Pharmacological Steroid Withdrawal

Steroids must be withdrawn gradually in any condition due to the inhibitory effect on ACTH release. Sudden withdrawal can stop cortisol production and curtail ACTH release. This can be dangerous for the patient. The dosage must be gradually reduced. Dr Etienne Callebout suggests if steroids have to be taken, it is advisable for them to be used in the morning only. This allows naturopathic medicine to work with the body better and limits the withdrawal side effects of the steroids themselves.

Abnormalities of Cortical Activity

Hyposecretion of hormones from the Adrenal Cortex causes the development of the condition known as Addison's disease. Addison's disease is usually autoimmune, but can also be triggered by tuberculosis and other causes. Addison's is considered a primary insuffiency condition. It is due to decreased secretion of both Mineralocorticoids and also glucocorticoids. Addison's is a rare, but destructive disease and can bring about life-threatening adrenal crisis. Treatment must be in the realms of emergency medicine only in such cases, in general all treatment alongside endocrinological specialisation.

Characteristics of Addison's disease:

- Loss of appetite
- Muscular weakness
- Nausea, vomiting and diarrhoea
- Inability to maintain the normal deposition of protein in the muscles
- Subnormal temperature and reduced metabolic rate
- Increased blood potassium and decreased blood sodium

- Pigmentation or bronzing of the skin and mucous membranes due to raised ACTH
- Hypoglycaemia
- Postural hypertension
- Lethargy
- Dizziness
- Depression
- U waves seen after T waves on ECG
- Hypercalcaemia tendency

Addison's disease can occur alongside Grave's disease with hyperthyroidism, hypogonadism in pituitary disorders and even with Diabetes mellitus, as part of a multiple autoimmune endocrine deficiency.

Hypersecretion of Cortical Hormones

Excessive activity of the adrenal cortex may be due either to over-stimulation by the Pituitary gland or to a tumour of the Adrenal gland itself. In either case there is an overproduction of Cortisol and the sex hormones. The clinical picture will vary according to which of these hormones predominate. Excess cortisol leads to Cushing's syndrome and excess androgens to Virilization or masculinization in females.

Congenital Adrenal Hyperplasia

Congenital adrenal hyperplasia (CAH) is a rare autosomal recessive condition causing deficiency of 21-hydroxylase, an enzyme usually found in the adrenal cortex. Low cortisol triggers a cascade of ACTH release resulting in hyperplasia of the adrenal cortex itself. This produces low aldosterone, which results in salt loss and even neonatal shock in some babies. The full-blown condition occurs 1 in 10,000 births. Although, 1 in every 100 births show signs for the expression of congenital adrenal hyperplasia.

Cushing's Syndrome

In this syndrome there is excessive production of Cortisol and to a lesser extent, of sex hormones. The condition is most commonly seen in women between the ages of 30 and 40. In Cushing's syndrome 75% of cases have inappropriate ACTH secretion, of which one third are due to a secretory tumour of the pituitary. 10% of cases have been linked to adrenal cortex tumours, and around 10% of cases are due to ectopic secretion of ACTH by small cell tumours in the lung, C-cell tumours of the thyroid or phaeochromocytoma. Also forms of Cushing's syndrome can be caused by a constitutively active CRF receptor on the anterior pituitary.

The following symptoms of Cushing's syndrome reflect the possible multiple actions of glucocorticoids:

- The predominant change is an obesity that mainly affects the trunk and face ("Moon face") but is not displayed on the limbs, due to the loss of muscle mass, as protein is used for gluconeogenesis
- Purple streaks or "stretch marks"(striae) develop on the abdomen and thighs
- Marked weakness occurs and mental changes such as depression are common
- Diabetes mellitus (Hyperglycaemia) develops, with subsequent polyuria and polydipsia
- The blood pressure is usually raised

- Increased growth of hair on the face (hirsutism), acne of the skin and amenorrhoea are all commonly seen
- Premature osteoporosis causing fractures is common for a lot of women; this is due to protein removal from bones

Cushing's disease

It can become confusing as we have the aforementioned Cushing's syndrome, but there is also Cushing's disease. Cushing's disease, however, has its genesis in the anterior pituitary gland. It is caused by a corticotroph adenoma that overproduces ACTH causing bilateral adrenal corticol hyperplasia and an excessive release of glucocorticoids, that can trigger Cushing's syndrome, but with additional pigmented skin.

The skin deeply pigments due to an excess of a hormone called melanocytes stimulating hormone or a-MSH, which is formed by the same gene responsible for ACTH.

All my patients with Cushing's disease, or with a previous history of the disease, have been adult females under the age of 35. Surgical removal of the pituitary adenoma is the usual course of action.

The following botanical medicines are usually indicated before surgery:

- *Vitex agnus castus semen*
- *Larrea tridenta folia*
- *Rehmannia glutinosa radix*

Homotoxicology can also be of enormous benefit too. I would advise KF2 and HormHeel formulations.

Mineralocorticoids

The main mineralocorticoid is aldosterone. Its functions are associated with the maintenance of the electrolyte balance in the body. It is also involved with the renin-angiotensin system and the anti-diuretic hormone in the maintenance of blood volume. The kidneys secrete renin. The mechanism of aldosterone secretion is as follows; when we have a decrease in the output of renal sodium and a fall in renal perfusion this leads to a stimulation of the juxtuglomerular system and an increase in Renin secretion from the kidneys, Angiotensin is then formed in the blood and Aldosterone secretion is stimulated, this then leads to increase in the renal absorption of sodium (which can lead to the fluid retention) and also an increased renal tubular secretion of potassium.

Sodium levels in the blood influence the amount of Aldosterone produced, i.e. if sodium blood levels fall, more aldosterone is secreted and more sodium reabsorbed.

Mineralocorticoids tend to decrease the number of eosinophils and lymphocytes in the blood, and to increase the serum neutrophils count.

Conn's Syndrome

Conn's syndrome is a rare condition occurring in only 0.2% of the UK population and accounts for a mere 1% of hypertensive patients. Conn's syndrome is also known a Primary Hyperaldosteronism, and is a consequence of an adenoma within the zona

glomuerulosa, secreting aldosterone. An increase in Angiotensin II raises the systemic blood pressure. Other symptoms of Conn's include sodium and fluid retention, hypokalaemia that induces muscle weakness, alkalosis, polyuria and polydipsia plus inhibited renin secretion due to raised blood volume.

Conn's syndrome is more common in females aged between 30 and 60. The most common medical treatment is the surgical removal of the benign adrenal tumour.

Iris Signs in Conn's syndrome

- Transversal running over cryptoid formation. A little wavy bright transversal runs over a honeycomb of crypts and defect signs. The transversal is usually the only one present in an iris, so it really does stand out for easy identification. Usually apparent in renal sector, and, if so, can indicate chronic fluid retention, primary hyperaldosteronism, history of nephritis or infection of the urinary system. If located elsewhere in the iris then we are looking at a severe tendency to chronicity and oxidative stress of the organ or system involved.
- Defect Sign in Embryological Adrenal Topography in either iris
- Pupillary Mydriasis

Herbal Medicine

- Vinca alkaloids
- *Viscum (IV Iscador)*
- *Coriolus versicolor*
- *Crateva nurvala cortex*
- *Curcuma longa rhizoma*
- Bio-Germanium supplements
- *Betula spp gemmae*

Adrenal Medulla

Adrenaline and Noradrenaline are released in response to stimulation of the Sympathetic Nervous System and through the influence of stress.

The Adrenal Medulla is completely encapsulated by the cortex. It is an outgrowth of tissue from the same source as the NS and its functions are closely allied to those of the sympathetic part of the Autonomic Nervous System. It is stimulated by its extensive sympathetic nerve supply to produce the catecholamines, adrenaline and noradrenaline in the ratio of 1:4.

These hormones have the same effects on the body as sympathetic stimulation:

- Dilatation of the coronary arteries, thus increasing the blood supply to the heart muscle
- Dilatation of the bronchi allowing a greater amount of air to enter the lungs at each inspiration
- Dilatation of the blood vessels to the skeletal muscles increasing the supply of oxygen and nutritional material to the muscles. This enables muscle activity to be sustained
- Constriction of the blood vessels to the skin, thus raising the blood pressure
- Contraction of the spleen, thus increasing the volume of circulating blood & lymphocytes

- Increasing the rate of change of glycogen to glucose, thus ensuring sufficient glucose for sustained muscle contraction
- Dilatation of the pupil of the eye due to stimulation of the radiating muscle fibres of the Iris
- Reduction of peristalsis in the digestive tract, limitation of blood flow to the intestines and diminishing the flow of saliva
- Inhibiting the tone of the anal and urethral sphincter muscles, thus inhibiting micturition and defecation
- Increasing the activity of the sweat glands and contraction of the arrectores pilorum causing 'goose flesh'
- Adrenaline and Noradrenaline prepare the body to deal with abnormal conditions so that it responds to fear, excitement and danger effectively, i.e. the 'fight or flight' syndrome

Abnormal Adrenal Medulla Secretions

Hypersecretion

If there is hypersecretion of Adrenaline or noradrenaline, severe hypertension can occur. In some people this can be as a result of diet, emotional issues and/or lifestyle. In severe cases, headaches, sweating, vomiting and raised, paroxysmal, blood pressure can occur. In its extreme this can be due to a medullary tumour which is called Phaeochromocytoma. It is a very rare event and is characterized by extreme panic attacks of 15-minutes duration. Phaeochromocytoma occurs in less than 1 in 100,000 persons, usually between the age of 20 and 60. In 10% of cases the tumours are bilateral.

The tumours can be identified by high levels of breakdown catecholamine products via urine testing, for example VMA. Catecholamines circulate bound to albumin. They are degraded by two enzymes in the liver called Monoamine oxidase (MAO) and Catechol-O-methyl transferase (COMT). Both adrenaline and noradrenaline are converted to vanillyl mandelic acid (VMA or HMMA), which is then released into the urine. Several 24-hour urine samples are collected and analysed using high-performance liquid chromatography (HPLC). MRI and CT scans are also performed utilising MIBG, which is taken up by the tumour.

In some studies it has been found that nearly 80% of phaeochromocytoma patients did not know they had such a tumour, and it has only been autopsy after their death, which has confirmed this.

Catecholamine secreting tumours can also be present in sympathetic ganglia. They usually occur in the abdominal aorta near the bifurcation.

In extremely rare cases an autosomal dominant mutation causes inherited bilateral phaeochromocytoma, as a component of Multiple Endocrine Neoplasia Syndrome Type II or MENS II. Unless you specialise in this specific area it is unlikely for the iridologist to see such a condition.

Iris Signs for Phaeochromocytoma

- Adrenal Embryological Topography in the left iris at 79º
- Defect classical adrenal topography at 180º

Catecholamines at Birth

Elevated levels of the catecholamines, adrenaline & noradrenaline, are present in the baby during delivery and the birthing process. These elevated levels help to regulate breathing and to break down stored energy into forms that provide cellular nourishment when the umbilical cord is cut.

Hyposecretion

When there is hyposecretion of the Medulla, the person is unable to deal with stress. This can occur from over stimulation of the adrenals due to diet, lifestyle, and emotional issues. It produces the classic 'burn out' syndrome common today, when the person no longer feels able to cope with life, they feel physically and psychologically exhausted. This can lead to immune breakdown if not addressed, and even cancer in some cases.

In conventional surgical medicine the adrenal medulla can be removed without there being any apparent deterioration in general health or clinical symptoms following damage to the gland as a result of Tuberculosis or a tumour. Medically the Medulla is considered non-essential for life.

However, through research with endocrine patients in the clinics, I have seen that those undergoing surgery of this kind, tend to develop greater susceptibility to dysglycaemia, extreme hot sweats and other menopausal symptoms, hyperparesthesia, hypertension requiring high doses of medication for control, depression and/or chronic fatigue. Such individuals have unfortunately been deficient in magnesium, Pantothenic acid, zinc and essential fatty acids also. Sufficient nutritional intake and absorption can help remedy many of these problems.

Noradrenaline

Adrenal medulla hormones greatly assist the body in its response to adverse environmental conditions. The main function of noradrenaline is maintenance of blood pressure by causing general vasoconstriction, except of one coronary artery. Noradrenaline is synthesised from the tyrosine amino acid. Tyrosine is converted to noradrenaline in response to the secretion of cortisol from the adrenal cortex.

Adrenaline

Adrenaline is associated with potentiating the conditions needed for 'fight or flight' after the initial sympathetic stimulation, e.g.:

- Constricting skin blood vessels
- Dilating blood vessels of muscles, heart and brain
- Converting glycogen to glucose
- Increasing the metabolic rate
- Dilating the pupils
- Dilating the bronchioles, allowing an increase in air intake

The Sex Hormones

The function of the androgens, oestrogens and progesterone are to influence the development and maintenance of the secondary sexual characteristics in both males and females, and also to increase the deposition of protein muscles, and reducing the excretion of nitrogen in males.

Androgens such as testosterone are synthesized and secreted by the adrenal cortex in both sexes. In males the Leydig cells in the testes are the principal sites. In females the main sites are the ovaries and the adrenal cortex. In fact through and beyond the menopause the adrenals and liver carry on the production of oestrogens and take over from the ovaries. Testosterone is sometimes converted via progesterone in the ovaries, testes and adrenal cortex.

In both males and females small amounts of progesterone are secreted by the adrenal cortex. A sub-clinical lack of progesterone has been linked by many to the growing pandemic of Subfertility in the western world. The adrenal glands play a significant role here from what I can conclude from clinical experience. Subfertility is often classified now as Autoimmune Spontaneous Infertility.

Androgens

Androgens are male sex steroids. They are anabolic, and have been taken illegally by athletes to build muscle mass and improve stamina. They are secreted in both males and females. In females with polycystic ovary syndrome it is common to have elevated androgens from the adrenal cortex causing numerous symptoms. However, in males adrenal androgen production only accounts for a small percentage of all androgens, that maintain growth and functions of muscles, reproductive system and energy levels.

Adrenal androgens are synthesized in the adrenal's zona reticularis. Androgens secreted by the adrenal glands are converted to more active androgens with more potent biological activity, such as testosterone, by enzymes in the peripheral tissues. The two main adrenal androgens are Dehydroepiandosterone or DHEA, plus Androstenedione.

The Adrenarche

A few years before the onset of puberty, approximately between the ages of 7 – 10, the zona reticularis begins to mature and the initiation of adrenal androgen secretion begins. This process is called the adrenarche. It occurs in both sexes and leads to the development of pubic and axillary hair, plus acne. In males the early development of the male sexual organs can be due to secretion of adrenal androgens after the adrenarche.

Symptoms associated with Adrenal gland imbalance include:

- Feeling tired during the morning until around 12 noon
- Feeling unrefreshed when waking up, even after a full night's sleep
- Feeling generally sleepy (* Be aware of differential diagnosis with these symptoms so far, as all of these may be associated with hypothyroidism)
- Alternate sugar and salty food cravings (but particularly refined sugar)
- Dilated pupil (mydriasis) with chronic adrenal stress
- Pupillary Hippus with acute adrenal stress
- General muscular fatigue and/or cramping in legs and/or calf muscles
- Irritability in situations where normally this wouldn't be the case for that individual
- Inflammatory skin conditions
- Increased pinocytosis
- Increased allergic sensitivities
- Depression
- Hypertension
- Irregular menses in females
- Transient tachycardia
- General fluid retention, particularly with PMT
- Dysglycaemia
- PCOS - Polycystic Ovary Syndrome

Emotions associated with the Adrenal glands

Many of these psycho-emotional dynamics can have a detrimental effect on allaspects of immunity through the PNEI circuits. I have correlated the following emotional dynamics with the adrenal glands:

- A crisis of self-esteem
- Fear of someone, or of doing something (the classic 'fight or flight' reaction)
- Self-criticism
- Fear of parental judgement
- Difficulties with motivation: a lethargy without reason
- Issues in connection to trust
- The experience of severe and unconstructive criticism from parents as an infant. For a female if the adrenal marker is in the right iris this relates to criticism from her mother. If it features in the left iris then the criticism stems from the father.
- For a male if the right iris has the adrenal sign then we are looking at fatherly criticism, and if in the left we often observe a critical tirade from the mother.

For these emotional conflicts I feel the most appropriate, practical and successful therapies are:

- Cranio-Sacral Therapy (Somato-Emotional Release)
- Colourpuncture
- Bach Flower Massage with Pine, Crab Apple or Mimulus
- Honesty Flower Remedy (Lunaria) massaged counter clockwise on the forehead - brow chakra

Iridology

I would like to reiterate that the iris and pupil are reliability personified in relation to accurate identification and analysis of adrenal gland-related or adrenal-based problems. In fact this observation through the microscope, often clarifies 'mysterious" symptom pictures and identifies the root cause and its possible numerous pathways.

The topographical location of the adrenal glands both medulla and cortex are at 177º to 183º in both right and left irides attached to the external border of the collarette.

The following signs can be visible:

- Indentation of the collarette towards the pupil at 177º to 183º is extremely reliable and consistent as an iris marker in most adrenal pathologies

- Crypt in this topography shows greater tendency to chronicity. Also seen with arterial hypertension

- Lacuna (usually Rhomboid or Leaf lacuna). A closed lacuna shows a family tendency to poor stress adaptability which can be inherited. A leaf lacuna illustrates a hormonal concern. A rhomboid lacuna in this location illustrates transient difficulties with inflammatory conditions

- Transversals (usually in combination with kidney, or ovary with PCOS, cervix with cervical dysplasia; therefore differential diagnosis is advised). A transversal in the adrenal topography can point the practitioner in the direction of Geopathic Stress (Ref: *Advanced Iridology Research Journal Vol 3 & 4, October 2002*)

- Pigment Patch - straw yellow here illustrates hypertensive tendency. Orange demonstrates blood sugar tendency with resultant dysglycaemia when the adrenal cortex is under stress. Brown/black can show an emphasis on immuno-suppression. With a straw-yellow pigment within this adrenal location, we have seen from serum analysis elevated neutrophils levels and decreased eosinophils, due to continued aldosterone aggravation

- Dark brown pigment indicates neuroendocrine adrenal medulla alterations due to disturbance of the cortisol to noradrenaline and adrenaline conversion. Chronic inflammatory diseases develop, such as polyarthritis, Fibromyalgia, autoimmunity or lymphadenopathy

- In autoimmune Addison's Disease we are looking at indentation of the collarette which is locally swollen - a partial hypertrophy

- Single lacuna in Adrenal location is also often present for Addison's disease. A single lacuna in an iris rapidly increases its importance

- The extremity of the Angle of Fuch's towards the pupillary edge is critical

- Differential diagnosis for Time Risk Sign at age 30 approximately or trauma *in utero* at 5 month of gestation

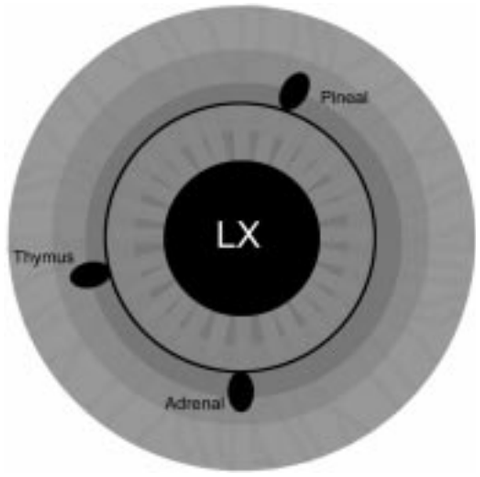
- Zig-zag collarette (partial) illustrating allergic tendency (dairy intolerance) and increased activity of inflammatory pathways – synovium, CALT or intestines.

- Inner Pupillary Border Space Risk sign in Space 16 at 109.6º o 115.8º(nasal representation)

- Radial furrow from the ciliary zone to internal border of the collarette at 180º in either iris suggests a family tendency to problems with adrenarche and subsequent androgen balance, before puberty in both males and females

The Adrenal gland topography comprises an integral aspect of the following correlation reflexes:

- Stress Axis (with Hypothalamus and Hypophysis on the collarette)
- Immune Axis (with Thymus, Pineal and Hypothalamus on the collarette)
- Hypoglycaemic Axis (with Hypothalamus, Liver and Pancreas on the IPB)



Immune Axis

Botanical Medicines for Adrenal Hypofunction

(All taken as liquid extracts (tinctures) unless stated - standard dose 30 drops twice daily. They should be 1:1 or 1:2 formulations.)

- *Glycchriza glabra radix*
- *Eleutherococcus senticosus radix*
- *Centella asiatica folia*
- *Urtica dioica* (as a tisane)
- *Borage officinalis* (Starflower oil - cold pressed, in capsulated form 1 to 2 capsules daily)
- *Vaccinium myrtillus Fr.*
- *Craetegus monogyna fr./flores* (in hypertension)
- *Zanthoxylum clava-herculis cortex*
- *Echinacea angustifolia radix*
- *Avena sativa semen*
- *Rehmannia glutinosa radix*
- *Pfaffia paniculata radix*
- *Withania somnifera folia*
- *Fucus spp.*
- *Smilax ornata radix* (for males only)
- *Arctium lappa radix*
- *Curcuma longa rhizoma*
- *Lentinus edodes*
- *Schisandra chinensis fr.*
- *Eupatorium cannabinum herba*
- *Cayenne pepper* (as an energising component of formulae)
- *Dioscorea villosa* (for female patients only)
- *Codonopsis pilosula* (Dang Shen)

Nutrition

Thorough nutritional protocols for the adrenals are covered in *Immunology & Iridology*, on pages 143 to 154. Of particular importance to the naturopathic practitioner is the balance of chromium, magnesium, Pantothenic acid, Essential Fatty Acids and zinc in all cases of adrenal dysfunction.

Substances to avoid in hyper and hypoadrenal cases

- Coffee/tea; black tea
- Chocolate
- Dairy products

- Contraceptive pill
- Depo-Provera injections
- Steroid-usage
- Alcohol
- Sugar
- Aspartame
- Amphetamines

Conditions linked to adrenal function

- Chronic Fatigue Syndrome or ME
- Lethargy
- Irritability
- PMT
- Oedema
- Thyroid
- Subfertility
- Addison's disease
- Conn's Syndrome (Primary hyperaldosteronism)
- Cushing's Syndrome
- Blood pressure anomalies

Further Testing Procedures

In addition to Iridology analysis, adrenal dysfunctions can be further assessed through:

- Adrenal 24 hour stress saliva profiles
- Salivary Cortisol Tests
- Hormone Urine Tests
- Tongue diagnosis (yellow coating towards the rear of the tongue, with deficiency of the root)
- Skin analysis
- Serum tests through Endocrinological consultation
- MRI scan on the adrenals

Adrenal Tonic formulated by John Andrews

Glyccrhiza glabra	2 pts
Eleutherococcus senticosus	2 pts
Vaccinium myrtillus	2 pts
Avena sativa	1 pt
Zanthoxylum clava-herculis	1 pt
Echinacea angustifolia	1 pt
Substitute: *Centella asiatica*	1 or 2 pts
In thyroid related concerns: *Fucus spp.*	1 or 2 pts
To provide energy in all senses:	
Cayenne	1/2 pt
Ginger	1/2 pt
Schisandra	1 pt
Curcuma (Turmeric)	1 pt

For Chronic Fatigue Syndrome:
Arctium lappa radix in place of *Eleutherococcus*

For Cushing's syndrome:
Add *Dioscorea, Vitex, Schisandra* or *Centella*

For Autoimmune/Inflammatory conditions:
Add *Curcuma longa, Arctium lappa radix, Ganoderma or Lentinus*

For aldosterone imbalance:
Add *Smilax, Craetegus Fr, Tribulus*

- CT Scan
- MIBG Testing in suspected phaeochromocytoma

All these are available and integrated by Iridologists around the world in private, general, specialist and hospital practice.

The Adrenal Fatigue Syndrome

Many have heard of this syndrome, but are usually not aware of the exact details. Most GPs and endocrinologists in the western world have usually not covered this syndrome as part of their training and they may not acknowledge its existence, similar to that of hypoglycaemia, SAD or ME several years ago. Despite the lack of awareness, this particular syndrome has hundreds of medical papers attesting to its authenticity dating back to 1917 and continuing throughout the 20th century, researched and authored by medical and natural practitioners alike. According to American naturopath Dr James Wilson, author of *Adrenal Fatigue – The 21st Century Stress Syndrome*, adrenal fatigue is largely ignored by medical professionals in the USA and misdiagnosed resulting "…in many unnecessary health problems for millions." and "…that medicine only officially recognises Addison's disease as Hypoadrenia..."

Symptoms of Adrenal fatigue

- Fatigue and extreme tiredness
- Feeling unrefreshed after sleep
- Paradoxical insomnia
- Exacerbation of Dysglycaemia
- Sugar, caffeine and chocolate cravings (alternated with salt cravings, for example with the intake of crisps)
- Irritability in routine situations
- Cramping in the leg muscles, especially the calves
- Feeling drowsy around 3 to 4pm
- Bilateral pupillary mydriasis with slow reactivity
- Yellow coating of the rear of the tongue that is maintained during the entire day
- Susceptibility to stress
- Poor resistance to infection and an increase in recovery times
- Increased allergic reactivity
- Mild depression
- Decreased libido
- Postnatal depression
- Lightheadedness
- Fuzzy head and poor short-term memory

What causes adrenal fatigue syndrome?

In essence, we are looking for the experience of consistent and chronic stress. Steroid based prescriptions can play their part also, for example in the treatment of inflammation, asthma or skin conditions. Post-viral syndromes can be included as a causal factor, for example for teenagers after a severe bout of mononucleosis or glandular fever. A lack of sleep can drive the stress levels skyward and thus the adrenals find it more and more difficult to compensate and stabilise in this situation. Most tired new parents probably have adrenal fatigue syndrome.

The use of Time Risk analysis can pinpoint the beginning of the adrenal fatigue process. The adrenal fatigue is usually offi-

cially diagnosed as something else, such as depression, hypochondria, fibromyalgia, *Candida*, or hypotension.

The adrenal fatigue could have been initiated at birth due to the adrenal capacity of the mother during pregnancy and at birth. The adrenal fatigue could be a condition acquired from the parent or it can be attributed to a difficult and traumatic birth experience for mother and baby.

Bilateral Mydriasis

The pupils of an adrenal fatigue patient do not remain contracted in the presence of increased illumination for long. They want to bounce back to dilation or mydriasis. This will, 99% of the time, occur with both pupils. Microscopic magnification and fiber optic lighting is preferable for accurate diagnosis. If the pupils take longer than 15 seconds to return back to previous diameter, then the practitioner should suspect chronic adrenal fatigue. Hippus suggest acute adrenal stress.

Refer to *Iris & Pupillary Signs, Second Edition* for complete spectrum of mydriasis differentiation

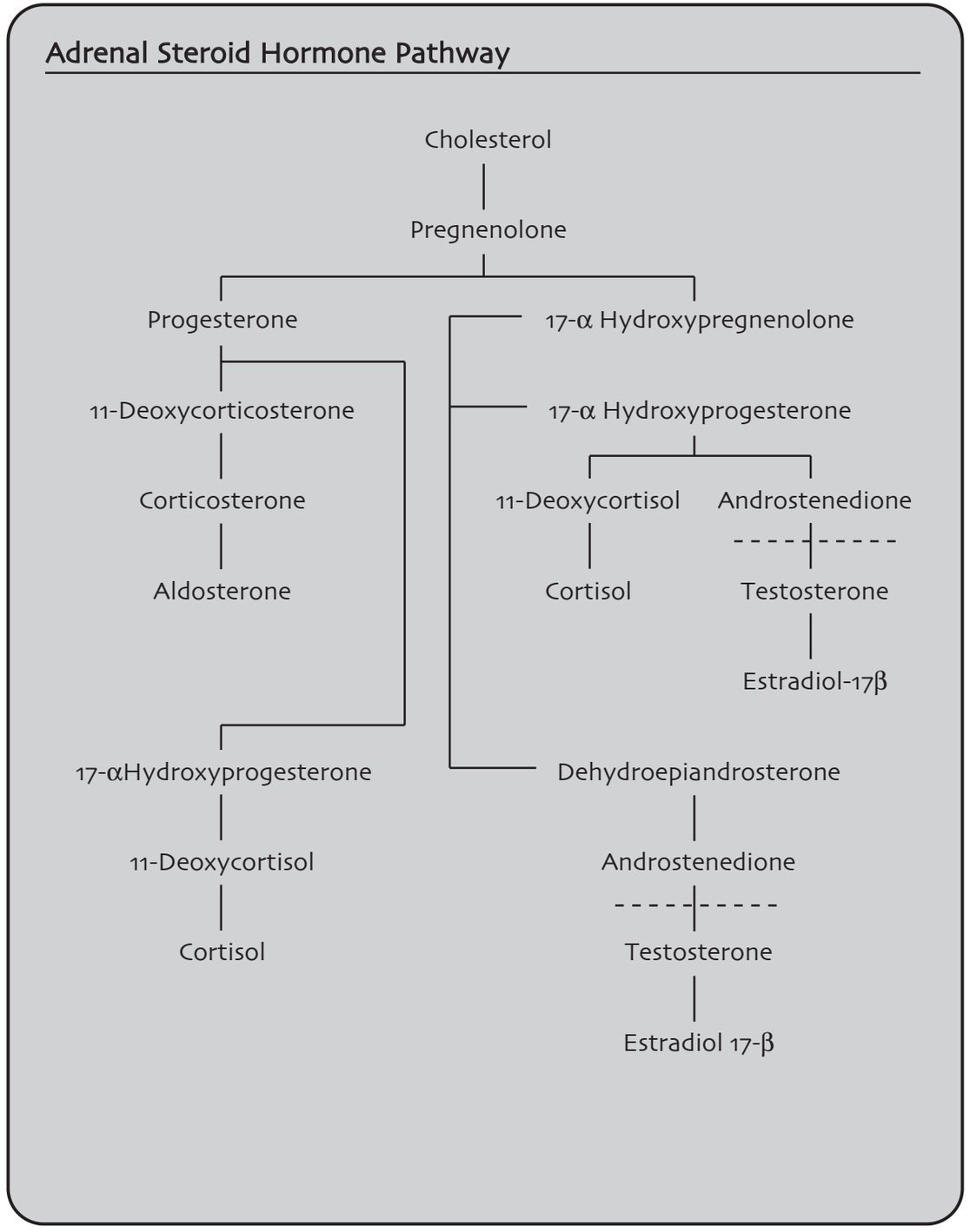
Natural Treatments

Herbal Medicine based on John Andrews' Adrenal Tonic, Cranio-sacral Therapy based on Jon Upledger, Reflexology, Ear Acupuncture based on Nogier & Bourdiol, Colourpuncture based on Peter Mandel, Homotoxicology based on Dr Hans Reckeweg and sound nutritional intake all have a part to play in the correction of adrenal fatigue syndrome.

Hornbeam Flower Remedy

A useful addition to the treatment and correction of adrenal fatigue syndrome is the prescription of Hornbeam flower remedy, as first discovered by Dr Edward Bach. Hornbeam flower remedy is indicated for the following:

- Mental and physical tiredness or fatigue
- Feeling unrefreshed in the morning after waking up
- Requiring stimulants such as coffee to get motivated
- Constant procrastination
- Inability to work, concentrate or study due to "brain fog"
- Lack of spontaneity in life



Endocrine Functions of the Renal System

Introduction

When we mention the hormonal system, many a layperson and also practitioner are not aware that the kidneys produce many different hormones and are involved in numerous intricate endocrine functions and pathways in the body.

From analysis of the iris, sclera, tongue and pupil we can determine the endocrine role of a patient's renal system and see how all of that is functioning.

Fluid Balance

Fluid balance in the body is controlled through the hormonal system; this is why the vast majority of oedematous patients have a, often undiagnosed, borderline hormonal problem. Many women are aware of the hormonal influence on fluid balance and how water circulates through the system during the pre-menstrual phase and also during pregnancy.

Water, as we know, is essential for every single cellular process in the body. In *Your Body's Many Cries for Water* Dr Batmanghelidj expertly illustrates that we need to consume more water than we are aware of, and, from this practice we can prevent and treat many common and serious diseases of modern society. The body is composed of 70% water and on average the human body contains up to 50 litres. Water is found both internally and externally to cells and it is also found in the composition of the blood as plasma. Water comprises most of the surface of the earth and our own beings. We all often need to drink more pure water, eat fresher organically cultivated fruits and vegetables and a have balanced metabolism.

The Intake & Excretion of Water

According to medical norms, the amount of water we take on in a 24-hour period should also be the water we excrete throughout that same 24-hour period. Excretion of fluid occurs mainly though urination. Urination should account for around 62% of fluid loss. Urination is followed by skin evaporation and respiration with around 18% of the loss each, and last, but no means least, is the 2% of fluid we lose through our bowel movements every day. These medical norms are based on the consumption of 2.4 litres of water per day, differences can occur in these findings if we drink a lot less or some more than the suggested amount in relation to our body size and speed of metabolism.

The Hypothalamus & Thirst

Thirst is stimulated and controlled by the hypothalamus, via the hormone Angiotensin II. Osmoreceptors within the hypothalamus can detect the water concentration of blood plasma. In addition to the hypothalamus some of the hormones involved in fluid balance, like aldosterone, can trigger the thirst sensation.

Adequate water intake is essential for balanced prolactin secretion. Antidiuretic hormone is secreted via the neurosecretory cells of the hypothalamus and the posterior pituitary.

Sodium ions

In *Endocrinology and Iridology* we can see the importance of regulating water intake and fluid balance for any patient. The regulation of fluid balance takes place in the kidneys or renal system. Hormones help to control the concentrations and volume of water excreted. The excretion of water is largely controlled by how well regulated sodium absorption is. Sodium is osmotically active. Sodium ions have the ability to attract water across cellular membranes. Sodium ions are present in large numbers in the system and water tends to passively follow movements of sodium ions wherever they go. This is why too much salt can tip the fluid balance causing cramps, lethargy, hypertension, or oedema.

Many hormones involve themselves in this process of fluid balance including:

- Aldosterone from the adrenal cortex
- Antidiuretic hormone (ADH) from the posterior pituitary gland
- Renin and Angiotensin II from the kidneys.

Other hormones, nerves and chemical factors such as the following modify the actions of these four hormones:

- Atrial natriuretic factor (ANF)
- Renal sympathetic nerves and catecholamines
- Kinins
- Prostaglandins
- Dopamine

Antidiuretic hormone (ADH)

ADH conserves water in the kidneys and various parts of the body. It is stimulated by the neurosecretory cells in the hypothalamus and secreted from the posterior pituitary gland. ADH is also known by its old adage of vasopressin. The most common experience of the influence of ADH we have is, unfortunately, having its secretion inhibited by alcohol. This then triggers dilute urine to be excreted in large quantities, and, this results in dehydration to different degrees the next morning.

Our liver and kidneys rapidly degrade excess of ADH. ADH is classified as a polypeptide hormone and is covered in more detail in the chapter on *The Pituitary Gland & Iridology*. Excess ADH causes water retention.

However, a deficiency of ADH is termed Diabetes insipidus. The main symptoms can be excess dilute urine causing fluid loss, dehydration and blood with high osmolarity.

Aldosterone

Aldosterone is a mineralocorticoid, which acts to conserve water and sodium. The liver, due to a level of 40% free hormone, quickly degrades plasma aldosterone. The other 40% is bound to albumin. Aldosterone

produced by the adrenal cortex acts chiefly on the DCT or distal convoluted tubule and the kidney's collecting ducts. The conservation of sodium is achieved by an exchange for potassium and hydrogen ions, in connection with other hormones such as ADH and the renin-angiotensin II system.

Renin

Renin stimulates Angiotensin synthesis. Renin itself is an enzyme. A plasma protein called angiotensinogen, which is synthesized by the liver, is acted upon by renin. The liver forms Angiotensin I from this protein, which is rapidly converted into Angiotensin II by the action of ACE, or, Angiotensin-converting enzyme, in the blood to control blood pressure, hence, the prescription of ACE inhibitors to control hypertension.

Angiotensin II

Like aldosterone, this hormone conserves the sodium reabsorption, therefore fluid. Angiotensin II inhibits renin release through negative feedback, stimulates the sensation of thirst in the hypothalamus, raises blood pressure, stimulates the release of aldosterone from the adrenal cortex plus combines with renin to form the Renin-Angiotensin II System. This system acts on the kidneys to conserve water and sodium through many complex pathways.

The Kidneys and Filtration of the Blood

Water excretion is mainly at the control of the kidneys. One kidney filters the entire blood volume once every 5 minutes. That is an incredible amount of work to take on. Most of the fluid excreted from the body is from the kidneys and out with the urine. Water and sodium are filtered into the kidney tubules by the gloumeruli, but most is reabsorbed back into the blood. Sodium ions are actively reabsorbed, while water passively follows the sodium ions by osmosis.

The fluid balance in the kidneys can be regulated via two altering factors in the kidneys: Sodium reabsorption and the permeability of the tubules to water. From a naturopathic perspective we can see how naturopathic principles concur with, even clarifying the medical physiology and basis for understanding.

Blood Pressure & Fluid Balance

Most people, when they think of blood pressure problems, naturally assume that the heart is the major concern. In fact, it is usually the function of the kidneys. The renal system, in connection with the adrenals, is responsible for the blood pressure changes in the vast majority of patients. The fluid balance affects the blood pressure because changes in blood volume affect pressures in the arteries. Many of the hormones that monitor fluid balance also control the arterial diameter, allowing blood pressure to be maintained despite loss or gain of water.

Research has found that fluid balance is often compensated for by cardiac output and the vasodilation or vasoconstriction of the peripheral resistance. This resistance is created by increasing arterioles through the

reduction of diameter thus increase in blood pressure.

Inherent Diuretics

Natriuretic factors carry a diuretic influence. These types of hormones work diametrically opposed to ADH, Angiotensin II and aldosterone. Blood volume is lowered, if it goes too low it is referred to medically as *Hypovolaemia*. Subsequently, blood pressure is lowered; water excretion is increased due to increased sodium elimination. This entire process acts as a safety mechanism to prevent potential life-threatening water retention.

These diuretic hormones are called Atrial natriuretic factor (ANF), Kinins, renal prostaglandins and dopamine, which is an amine, synthesised in the renal proximal tubules.

ANF is probably the most well known, as it is a polypeptide hormone synthesised by the muscles of the cardiac atrium. When the cardiac muscle is stretched or distorted due to raised blood volume, hypervolaemia, ANF is secreted. The actions of the ANF are far-reaching and include:

- Inhibition of renin secretion
- Aldosterone inhibition
- Vasodilation triggering a lowering of the blood pressure
- Decrease of sodium reabsorption via the kidneys

Polypeptide Kinins work on the kidneys to inhibit the action of Anti-diuretic Hormone from the posterior pituitary, decrease sodium reabsorption, stimulate vasodilatation in the kidneys plus an increase of prostaglandin synthesis in the kidneys. Thus we can see how the correct fluid balance and Kinins secretion is vital in polyarthritis or gout. Patients with irides of a uric acid diathesis need to be checked for levels of Kinins that are formed in the blood.

Blood Pressure Norms & Herbal Support

The adage of a lot less salt and more water can dramatically help to balance blood pressure. The safest herb, with no known contraindications, for balancing hypertension is *Craetegus monogyna fructus* or *Craetegus oxycantha flores*. It best utilised as a liquid extract at a dosage of between 20 to 70 drops twice daily. It can be taken long term, and I would advise this approach. *Craetegus*, or Hawthorn, is considered a revered general cardiotonic. In some countries it is a prescribed heart drug. It is also of benefit in improving oedema, kidney functions and Hypercholesterolaemia.

Also of particular benefit can be *Tilia spp flores, Trifolium pratense flores, Curcuma longa rhizoma, Coleus forskohlii, Allium sativum, Leonorus cardiaca herba, Olea europea folia, Achillea millefolium flores, Valeriana radix, Rosemarinus officinalis* & in small, energetic quantities, *Capsicum annum fr*. Most of these should only be used after consultation with an appropriately experienced herbalist.

Garlic, Turmeric, Cayenne & Olive oil should also be utilised as foods.

Blood Pressure Normal Ranges

- For an adult in their the 20s the N.R. is 120/80 mmHg
- Females and vegetarians of this age group may have an average blood pressure of 110/70 mmHg which is normal
- Abnormal blood pressure in your 20s would be 140/90 mmHg
- At 50 years the abnormal range would be considered at least 160/95 mmHg
- At 75 years of age 175/105 mmHg is considered hypertensive
- Generally as long as we have a good 40 or 50 point spread between the diastolic and systolic readings, we are observing steady blood pressure
- Also the diastolic blood pressure, as a benchmark, needs to be below 95/90
- *White coat hypertension* is extremely common, regular checks and monitoring, rather than prescriptions, should be advised over time to ascertain a true blood pressure
- When we are digesting a sizeable meal our blood pressure naturally rises

Blood pressure over 180/110 mmHg usually requires either acupuncture or pharmaceutical agents, plus in the long-term suitable dietary and lifestyle improvements, plus exercise programmes.

In addition to these factors Kitty Campion has authored a complete treatise on managing hypertension holistically.

Iridology Signs for Renal Endocrinology

Embryology Topography

The embryological topography should be our main focus, in combination with the collarette and IPB. The embryological kidneys are located on the internal border of the collarette at 180º in the right iris. This suggests aetiology of endocrine origin.

In the left iris we can locate the kidneys at 92º and 141º. Predominant iris signs, according to the research, include crypt or yellow pigment.

Collarette
The collarette will be white, unless we have a yellow central heterochromia present.

Straw yellow central heterochromia indicates tendency to:

- Intestinal dysbiosis, especially with Stacked signs on the IPB
- If the central heterochromia tends to a mix of ochre and yellow then it is necessary to examine duodenal activity

- Tendency to viral infection, with particular problems with viral warts
- Inherent compromise of the renal endocrine system and all that can entail with a restricted collarette with complete atrophy of the IPB only
- Essential Fatty Acid deficiency tendency
- Raised histamine level tendency

IPB

Inner Pupillary Border Signs to observe for include:

- Erosion of the IPB between 116º to 128º or 254º to 266º
- Detached IPB from the iris edge
- Atrophy of the complete IPB diameter with restricted collarette

Adrenal pigment

A small isolated diffuse yellow pigment on the adrenal topography, attached to the external border of the collarette at approximately 180º is indicative of the adrenal involvement in hypertension and general fluid balance. We can expect to see alterations in the Renin-Angiotensin II system and aldosterone secretion. The adrenal pigment can appear in either iris. The right iris indicates more renin-angiotensin involvement; the left one tends to aldosterone discrepancies.

Shoe Lacuna

A shoe lacuna is topolabile for the renal system. The possibility of the endocrine link must be made with a shoe lacuna attached to the collarette. In *Iris & Pupillary Signs, 2nd Edition*, the full differentiation of a shoe lacuna in the iris is explored. Hormonal concerns are integrated with the main issues of the shoe lacuna, such as hypertension, oedema and mineral storage.

Vascularised Vessel

A vascularised vessel running through the classical kidney topography should draw our attention, as it stands out against the normal stromal background of the iris. These vessels are best viewed under at least a 36x magnification, preferably higher.

A vascularised vessel in this location can indicate:

- Oedema
- Adhesions
- Alterations in renal prostaglandins
- Paraesthesia

Therapeutic Support – Herbal Medicines

- *Taraxacum officinalis folia*
- *Taraxacum officinalis radix*
- *Arctium lappa radix*
- *Eleutherococcus senticosus radix* (*Eleutherococcus can trigger hormonal oedema in some sensitive female patients)
- *Paeonia lactiflora radix*
- *Crateva nurvala cortex*
- *Agropyron repens rhizoma*
- Evening Primrose Oil
- Borage Seed Oil
- Melons
- *Withania somnifera folia*
- *Betula pendula folia*

- *Zea mays*
- *Schisandra sinensis fr.*
- *Andrographis paniculata*
- *Arctostaphylos uva-ursi folia*
- *Fraxinus excelsior cortex e folia*
- *Tribulus terrestris*
- *Boerhaavia diffusa*
- *Lawsonia alba folia*

The Kidney & Bladder Flush

The Kidney & Bladder Flush is an important and easy to do naturopathic technique to help in the possible treatment and prevention of conditions effecting the kidneys, bladder, blood, lymphatics and heart.

It is also an important first step for most detoxification measures; because if the kidneys are not filtering the blood correctly and eliminating waste and excess toxins through the urine; then this can clog the kidneys and bladder, leading to toxic and waste material re-circulating in the bloodstream and having the knock-on effect of giving the liver more work to do to maintain a healthy balance.

We should urinate between 8 and 12 times a day depending on our fluid intake.

The kidneys help to maintain the salts and fluid balance, the blood pressure, some hormonal interactions and many other vital functions.

Conditions that can arise from under functioning or overworked kidneys can include: Cystitis, recurrent kidney infections, blood pressure problems, lower back pain, Hydrocele, fluid retention, PMT, arthritis, heart problems, kidney stones, low energy, potassium deficiency, urethritis, uraemia, eczema, dysuria and enuresis (bedwetting).

Emotionally fear, resentment and creativity are big factors on the kidneys and in many systems of traditional medicine from around the world the kidneys are associated with worry. In Chinese medicine the kidneys are considered the seat of all emotions.

The Flush

What you will need:

1 pint of still pure water (distilled is preferable; if not filtered or bottled water like “Vittel”)

1 pint of organic juice (either apple, pear, carrot or pineapple)

1 juiced fresh lemon or lime

60 Drops of Renal Tonic

What to do:

Mix together all these ingredients first thing in the morning before any food. Drink down within 1/2 hour.

Continue to ‘flush’ your system from this point throughout the morning until 12 noon. Use fluids such as pure water, organic juices, herbal teas such as Detox Tea or Nettles Tea.

Avoid stodgy foods. Eat only juicy fruits, especially melon if in season. Chew and eat some of the melon seeds.

From 12 noon continue with your normal routines.

Avoid tea, coffee, alcohol, meat, dairy products, fizzy drinks, artificial sweeteners, spinach and rhubarb and inorganic supplements during the flush.

What to expect

Naturally from drinking more fluid than normal you will urinate more. Not necessarily more times; but definitely greater volume will be passed. Your urine maybe darker in colour during the flush; especially in the morning. The odour of the urine may be more pungent, especially initially.

Many people have passed catarrh, dissolved crystals and kidney sand; which looks like yellow sand or red brick dust. None of this has been painful in any way; and these are very good signs of your kidneys detoxifying excess metabolic, toxic, synthetic and inorganic waste materials from your system.

If you are concerned about any symptoms whilst on the flush please contact your practitioner immediately.

Duration

Do the flush once a day for 5 to 7 days. Rest from the Kidney flush for a week; then repeat. Use the flush four times per year; try to avoid the winter months not to cause a chill to the kidneys.

Contra-indications

The Kidney & Bladder Flush is one of the most soothing and safe naturopathic techniques to undergo. However, do not do the Kidney & Bladder Flush without consulting with a naturopathic, herbal or medical practitioner if you are:

- Taking blood pressure medication or have blood pressure problems
- Taking prescribed beta-blockers
- Taking prescribed Warfarin
- Diagnosed with Diabetes insipidus
- Undergoing kidney dialysis
- Have had cardiac surgeries
- Are pregnant

The Renal Tonic

The Renal Tonic helps to support and maintain healthy function of the kidneys, bladder and urethra. It also helps to stimulate detoxification through the kidneys; whilst maintaining correct mineral, salt, hormonal and fluid balance. It contains cold-pressed extracts of Silver Birch leaf, Juniper berries, Couch Grass rhizome, Dandelion leaf and root, Burdock root, Uva-Ursi leaves, Corn silks and Golden Rod tops in a base of organic grain alcohol.

- Gemmotherapy, as pioneered by Pol Henry, including the following remedies - *Ilex aquifolium gemmae e Betula verrucosa gemmae*, plus *Calluna vulgaris gemmae*
- Acupuncture
- Colourpuncture (Endocrine Co-ordination & Kidney/Bladder Function Circle according to Gleditsch)
- Water
- Increase foods rich in natural sodium, potassium, phosphorus & magnesium (potassium contra-indicated with amyloidosis)
- Reduction of salt, meats. alcohol and carbonated drinks
- Reneel™ Homotoxicological biological medicine
- Sulphur 30c

A great book to encourage your patients is *Your Body's Many Cries for Water* by Dr Batmanghelidj. This is highly recommended, and, I would even say one of the most important books on health published to date.

Polycystic Ovary Syndrome & Iridology

Introduction

Polycystic Ovary Syndrome, or PCOS, is a common, yet, complex hormonal problem, with about 20% of women affected. Although many of these women can be asymptomatic, only a fraction go on to develop problematic symptoms, which dramatically impact on their quality of life. PCOS, also known medically as Stein-Leventhal syndrome, has both ovarian and adrenal involvement which trigger the development of multiple, small follicular cysts to form beneath a thickened and white ovarian capsule as a result of increased secretion of androgens from the adrenals and/or ovaries, plus many other dysfunctions of endocrine pathways.

Instead of releasing ova, the swollen follicles swell with fluid and evolve into cysts. Consequently, the ovaries can often become two to five times larger than normal. This explains why PCOS can be such a painful condition for women, as any pressure in the anatomical locations of the ovaries can greatly increase around menstruation.

The cysts are multiple immature follicles, which can present difficulties with conception. The immature follicles develop in either one ovary or even both. They are detectable through ultrasound scan between the onset of puberty and the menopause. This proves to be very difficult for endocrinologists to initiate multigenerational genetic studies on PCOS. We have no male equivalent of polycystic ovaries.

The incidence of PCOS is increasing in the western world and can be one of the main reasons why fertility can be compromised. PCOS is more common in those with darker pigment of the skin, hair and eyes. In UK Asian women the incidence of PCOS rises to 50%. In the USA 40% of PCOS patients also have clinical obesity. The practitioner is often faced with a myriad of varied endocrine results, which is consistent with PCOS.

Conventional medical treatments for PCOS involve the prescription of the contraceptive pill, anti-oestrogen agents such as clomiphene, Diabetes medication such as metformin, cosmetic treatment for hirsutism (laser treatment, electrolysis, etc), anti-androgen agents, laparoscopic ovarian drilling or even hysterectomy. Although many of these can help relieve symptoms, some of them can have dramatic and unwanted side effects or interactions and none of these approaches help to address or attempt to alter the cause or causes of the problem. Working towards correct endocrine and blood sugar balance with a particular emphasis on weight control is paramount for successful therapeutic support, management and resolving many of the symptoms in PCOS.

Medical Tests

PCOS is usually diagnosed via consultation with an endocrinologist after ultrasound scan, history taking and blood serum tests

demonstrating a raised LH:FSH ratio. Iridological findings are discussed in a later paragraph; however, iris & pupillary signs are consistent in PCOS.

Symptoms

- Hirsutism (in 60% of cases)
- Obesity or significant weight gain (in 40% of cases)
- Acne (in 30% of cases)
- Subfertility (in 70% of cases)
- Amenorrhea – absent periods (in 20% of cases)
- Oligomenorrhea – irregular periods (in 45% of cases)
- Dysmenorrhoea (painful periods – in 80% of cases)
- Dysglycaemia – irregular blood sugar levels (in 76% of cases)
- Increased insulin levels and insulin resistance
- Elevated testosterone levels – circulating androgens
- High oestrogen levels
- Elevated luteinising hormone levels (LH) from the anterior pituitary
- Decreased follicle stimulating hormone levels (FSH) from the anterior pituitary
- Elevated leptin levels
- Multiple cysts in at least one ovary
- Constipation
- Sugar cravings
- Anxiety (general anxiety disorder)
- Reduced concentration levels
- Low energy levels – overwhelming fatigue
- Thick coating on the tongue which is present all day

Complications

- Elevated risk of Diabetes and predisposes to heart complications, especially Myocardial infarction, in later adulthood
- Congenital adrenal hyperplasia (PCOS always seen in such cases)

Differential Diagnosis

We often need to determine that the patient really has PCOS and not any of the following conditions, which share similar symptomology:

- Thyroid dysfunction
- Salpingitis
- Diabetes
- Hypoglycaemia
- Chronic Fatigue Syndrome
- Endometriosis
- Appendicitis (if we are presented with pain in the right ovary area of a patient, we need to check to see if the tip of the 12th rib is very tender to palpation. If it is then we have to suspect appendicitis, if not we need to differentiate between ovarian cyst, mesenteric lymph node congestion or problems with caecum)

Aetiology

The causes of PCOS are still debated and explored – the situation is very much like Iridology when we can humbly see that the more we find out the less we realise we know!

Four main physiological causes of PCOS are suggested through endocrinology. These include metabolic, pituitary, adrenal, and naturally, ovarian causations. I would also suggest the necessity to study stress factors and emotional issues, particularly around the time of the onset of puberty and see if there are any correlations or underlying issues with current psychological challenges, including Bulimia. Research has found that 60% of Bulimics have polycystic ovaries.

The implication of the hypothalamus has also to be assessed, as it is the hypothalamus which triggers the LH and FSH levels from the anterior pituitary gland, produces leptin, triggers and balances adrenal functions, reacts to the experience of stress, helps to balance the blood sugar levels and is central to the general hormonal balance.

Most cases of PCOS start to develop during puberty. There are some suggestions that PCOS is a genetic condition, although I have not personally witnessed any significant correlation myself. In previous generations, PCOS could have gone undiagnosed or misdiagnosed as some other gynaecological condition. Some maverick researchers have concluded that conditions like PCOS are actually set and triggered in gestation, due to the hormonal challenges the mother may face, either from previous administration of the contraceptive pill or xenoestrogens in the environment and households. I can correlate this due to the high degree of accuracy with the new embryological topography in iridology and the identification of polycystic ovaries.

Adrenal glands

The role of the adrenal glands in the development of PCOS has been explored because of an intimate association between elevated levels of DHEAs, secreted from the adrenal cortex. In iridology we can see how bilateral pupillary mydriasis and adrenal gland signs, in either embryological or classical topography attached to the external border of the collarette, are so frequently observed with PCOS patients.

We also need to examine the role of the adrenal glands as producers of androgens, together with the ovaries themselves. In some cases of PCOS hyperandrogenism is apparent and there is considerable hirsutism and other symptoms consistent with elevated androgen levels. This hyperandrogenic environment can be due to insulin resistance and dysglycaemia. It is thought that around 60% of PCOS patients have high androgen production.

There is also evidence from recent endocrine research to show that increased activity of enzymes that biodegrades active cortisol down to an inactive version, results in reduced negative hormonal feedback effects, increases adrenocorticotrophic hormone (ACTH) secretion and leads to increased production of adrenal androgens.

Blood sugar balance

Many of the symptoms such as weight gain, elevated leptin, anxiety, sugar cravings, fatigue can be attributed to erratic blood sugar levels, also known as dysglycaemia,

and/or insulin resistance. These tendencies can be accurately assessed through Iridology and corroborated through the symptom picture. When we have blood sugar levels in equilibrium, hyperinsulinaemia reduces, then PCOS symptoms can dramatically improve, as there is less free testosterone running riot in the bloodstream and hormonal system.

Most of the testosterone is transported around the blood by carrier protein called sex hormone binding globulins. The more of these sex hormone binding globulins (SHBG) we have the higher the levels of testosterone.

Medically the diabetic drug Metformin is usually prescribed to treat insulin resistance, but in my experience it can lead to masking of the causes of the problem and also many of my patients complain of numerous side effects. Nutritional adjustment and herbal support can illicit core changes and create a solid foundation for the patient's health.

Sensible and progressive weight loss is of incredible value in PCOS as this helps to balance free testosterone levels and the reduction through to resolution of symptoms is expedited.

Emotional Aspects

It is a reasonable proposition to make that in psychoneuroendocrinoimmunology the major recipient organs and glands in female patients are the ovaries, uterus, breasts or skin. All of these have a close relationship with neuroendocrine pathways.

From clinical practice it has been possible to identify consistent emotional issues that correlate with PCOS patients. These can be highlighted through holistic iridological approaches. They often relate right back to the patient's emotional experience during puberty. Perhaps, these issues for each individual could be formed much earlier whilst *in utero*?

Five main issues correspond from cases:

- Injury to the self-esteem
- The experience of sexual violence
- Emotional and/or sexual betrayal
- Unexpressed rage or anger (usually towards a prominent male figure within their life)
- Blockage to or ignorance of inherent creative abilities

Many of these can also be an integral part of Bulimia and they also crossover. When we are dealing with emotional issues we need to be aware that we all have layer upon delicate layer which remain unexpressed or unexplored.

Iridological Assessment

- Embryological topographical location for the ovary in right or left iris – most prominently either defect or crypt in 90.1% of cases

- Embryological topography signs for the hypothalamus, pancreas or adrenals. Partially atrophic IPBS were present in 78% of research cases. Localised hypertrophy or absence is apparent in normal IPBs between 128º – 132º

- Collarette structure in PCOS is often discoloured, hypertrophic and ventrally distended. Lacuna on collarette associated with a local indentation.

- Pupillary dynamic of mydriasis (73% incidence in PCOS patients, which could link with adrenal stress – with the other patients we had 14% with hippus and 13% with normal pupil size and reaction)

- Classical ciliary zone reflex for the ovary attached to the external border of the collarette – right or left iris with a crypt in 84% of cases, leaf lacuna, orange-brown pigment patch in 68.5% of cases or transversal in 5% of cases

These factors compound the aforementioned signs:

- Classical topography for the pancreas @10', 20', 40' & 50' in both irides
- Classical topography for the hypothalamus & adrenal glands

We also need to check for prevention or forewarning on long-term complication risk factors through:

- Cardiac Risk Signs in both right or left iris (also check family history)
- Diabetes risk signs
- Adrenal hyperplasia markers

These iridology markers are listed in order of importance from the top down. Obviously in some cases the patient can present several of these iris and pupillary signs. In rare cases a patient will have nearly all of these. This is good because we then have a body of evidence suggesting the same thing and the path is clear to reach an accurate analysis.

If the iris is silent and no signs are present, then the embryological topography is essential and will give greater accuracy. This primary focus should be followed by assessment of the Inner Pupillary Border from 40 to 60x magnification.

The markers for the hypothalamus, pancreas and adrenals will help illustrate and convey the underlying cause to the practitioner, in order to help the patient as fully as is possible.

It is worth noting that in 44 patients with PCOS the three main constitutional iris type categories had an equal representation, with a slight bias to the Lymphatic iris, although this is the main iris type I will generally see in the clinic.

Therapeutic Support

Endocrine adaptogenic agents are essential in the treatment plan for PCOS. They will help to modulate levels of androgens, LH, FSH, oestrogen, leptin, insulin and also prolactin. They will also help regulate any menstrual irregularities and buffer the negative influence of stressors on the Hypothalamic – Pituitary – Adrenal axis. These endocrine adaptogens include:

- *Turnera diffusa folia*
- *Eleutherococcus senticosus radix*
- *Withania somniferum folia*
- *Vitex agnus-castes semen*
- *Angelica sinensis radix*

- *Pfaffia paniculata radix*
- *Gymnema sylvestre*
- *Momardica charantia fructus*
- *Paeonia lactiflora radix*
- *Cordyceps sinensis*
- *Schisandra chinensis fructus*
- *Glycchriza glabra radix*
- *Ganoderma lucidum*
- *Vaccinium myrtillus fructus*

Other botanical agents really help in bringing down the testosterone levels. These include:

- *Paeonia radix*
- *Turnera*
- *Serenoa serrulata fructus*
- *Tribulus Terrestris*

Other herbal medicines can assist in alleviating a lot of the pain associated with PCOS and regulate menstruation, in addition to the adaptogens. Some of these can also help to reduce hormonally dependent cystic formations:

- *Nymphaea odorata rhizoma*
- *Corydalis rhizoma*
- *Thuja occidentalis folia*
- *Viburnum opulus*
- *Helleborus niger radix*
- *Carduus marianus*

Homoeopathic Pulsatilla has been useful for erratic menstruation. Also Kalium carbonicum from 30c to 6c is additionally supportive. In Homotoxicology Gynacoheel™ can be a successful adjunct, although it is contra-indicated with thyroid complications. In addition to these possibilities Guna Laboratories, from Milano, offer a more complex and holistic approach that embraces the fundamental application of PNEI. Their G3 formulation includes various potencies of Corpus luteum, Ovarium, Pulsatilla and Kalium carbonicum, which is in liquid form and administered orally.

Fresh Aloe vera or Sempervivium gel applied externally can be used to treat acne.

If the patient has any depression associated with the diagnosis of PCOS and chronic pain or discomfort, plus blood sugar imbalance then I will often include one of the following:

- *Hypericum perforatum flores*
- *Escholszia californica radix*
- *Centella asiatica herb*
- *Sceletium folia*
- *Petasites hybridus*

I would normally use a polypharmacy approach after consultation, usually consisting of five to seven of these different herbs in liquid form. The content of the herbal prescription would depend on the individuality of the patient. This would be reviewed on a monthly or bi-monthly basis. This is of great importance, as at the present time in the UK, a patient may have appointments with an endocrinologist 3, 6 months or even a year apart.

The dosage will vary each time per individual.

Nutrition

Excellent natural nutrition is vital in PCOS to help stabilise weight gain, adrenal function, improve biofeedback to the hypothalamus, blood sugar balance and resistance to stressors. Naturally, all nutrients need to be consumed and assimilated, but the following occur with low levels consistently with PCOS patients, as evidenced through eye, tongue, nail and blood analysis:

- Chromium
- Magnesium
- Germanium
- Zinc
- Iron
- Pantothenic acid (Vitamin B5)
- Gamma Linoleic acid (Essential Fatty Acid)
- Vitamin C
- Vanadium

Spirulina is an excellent source of these, especially B-vitamin complex, chromium and magnesium to facilitate blood sugar and fat metabolism balance. In PCOS Spirulina can really live up to the claims of helping control weight gain or fluctuations. Most PCOS patients really benefit from taking between 4 to 8 Spirulina tablets daily before food.

I always provide information sheets for patients with the foods that are the highest sources of these and how they can optimise their assimilation.

Foods to Avoid

The following need to be avoided in a person's diet as much as is possible. The more severe the PCOS the more the patient needs to avoid them:

- Meat
- Dairy products
- Refined sugar
- Alcohol
- Artificial sweeteners

The PCOS Diet Book by Collette Harris is an excellent source of information, diet plans for PCOS, further nutritional and natural supportive measures that have been used by the author to treat her own PCOS. Collette Harris is also the co-author of the book called *PCOS: A Woman's Guide to Polycystic Ovary Syndrome* (both books are published by Thorsons, and before you ask, alas, I do not receive a commission!). They are excellent resources of information and I have several copies for patients to loan as means of explanation of PCOS, support and inspiration. Many women diagnosed with PCOS have not had the condition explained fully to them. These books are concise and user-friendly and I would suggest them for you, your patients and also students of iridology or naturopathic medicine.

Other Disciplines

I have found the following disciplines to be of benefit on a number of levels for people:

- Cranio-Sacral Therapy with Somato-Emotional Release
- Art Therapy
- Colourpuncture or Acupuncture for addressing emotional issues, endocrine balance and pain management
- Regular exercise
- Stress management techniques, including meditation
- Counselling
- Advanced Reflexology

A Naturopathic Perspective on Endometriosis & Iridology

An Increasing Incidence

The incidence of endometriosis is increasing. As each year passes I consult with increasing numbers of women, with a growing amount in their teens or twenties, with endometriosis. There are many signs consistent with analysis of endometriosis in the iris and pupil. The condition is a female only concern, with over 5% of adult females affected. Many cases still go undetected. Iridology has often revealed such cases to me.

Treatment and management can be attained through natural medicine, with a combination of herbal medicine, homotoxicology, nutrition, cranio-sacral therapy, acupuncture, aromatherapy & exercise. Many women develop endometriosis after taking the contraceptive pill. More recently, pollutants known as xenoestrogens have been identified, being absorbed through the environment, water and food chain, to add to the development of the condition.

Description

Endometriosis is defined as the presence of functional abnormal tissues in an abnormal location in the uterus that is an ectopic growth of the endometrium, which still responds to cyclical hormones, thus expanding and bleeding. This may also occur between the myometrium and in various locations in the pelvic cavity, in fact the endometrium can travel to the large intestine causing bleeding from the anus during the menses. Endometrium has even been found in the lung tissue and the brain.

The two most common sites for ectopic endometrial cells are the ovaries and ligaments of the uterus. Followed by fallopian tubes and pelvic peritoneum. It is less commonly found in the large intestinal wall, bladder, and umbilicus and from laparotomy scarring.

It is less frequently observed in the ectopic growth in the lung pleura, brain tissues and lymph nodes.

The ectopic endometrium forms a cyst, that is prone to rupture, resulting in inflammation and the subsequent formation of multiple adhesions. Pelvic pain can be extreme in endometriosis, with debilitating effects for some women.

Sometimes Pelvic Inflammatory Disease (PID) is the cause of this extreme pain, if symptoms do not show signs of improvement over 6 to 9 months of treatment, then PID should be suspected and investigated. Iridology-wise, transversals are commonplace in cases of PID. Treatments should involve berberine and bemberine alkaloid-containing herbs such as *Berberis*, *Coptis* or *Hydrastis*; probiotics and *Nymphaea odorata radix*.

Medical Diagnosis

Medical diagnosis is via Laparoscopy. The route of surgery or endometrial ablation is often suggested. However, the Endometriosis can often return after these procedures.

Prostaglandins

Some researchers looking at endometriosis have classified it as an autoimmune disease. Here we have pathways that point to a neuroendocrine immunomodulatory disruption. *Endometril hyperplasi* may occur due to an excess of oestrogens, usually unopposed. Endometritis can occur – here we have inflammation of the endometrium, sometimes *Staphylococcus*, *Streptococci*, or *Clostridia* infections cause it.

In current endocrinology we have three main theories to explain the development of endometriosis:

Firstly, it is said that menstrual debris enters the peritoneal cavity via the fallopian tube. Due to a lack of immune reaction implantation and proliferation of tissues ensues. This then triggers a hyperactive immune response – leading to autoimmunity.

Secondly, it could be linked to Metaplasia of the peritoneal epithelium – an unknown stimulus causes the epithelium to transform into endometrial tissues. Endosalpingosis may develop.

The final main theory is that of Metastatic spread – emboli of endometrium may travel via blood or lymph vessels to reach ectopic sites in the body – lungs, brain, intestines, umbillicum, lymph nodes, etc.

More alternative theories suggest unopposed oestrogens, leading to dominance in place of a progesterone balance.

However, none of these theories fully explain endometriosis in its many guises. It is likely to assume that all theories share some validity, at differing times in differing individuals.

Main symptoms:

- Lower abdominal pain during menstruation (75%)
- Constant pain if adhesions have developed
- Menstrual irregularities (60%)
- Deep dyspareunia (30%)
- Infertility (30%)
- Extreme PMT
- Ovulatory pain
- Sweats
- Migraine, often accompanied with nausea
- Bowel obstruction – chronic or transient constipation
- Bleeding with bowel movement during menstruation

The appearance of infertility is probably due to the disruption of balanced ovarian functions, due to distortion of tubes due to adhesions, blockage to tubes by endometriosis deposits leading to ovulation actually happening into partitioned areas of fibrosis. Surgical adhesions from previous procedures can increase the chances of infertility, although I like to maintain a positive emphasis by using the preferable term of Subfertility, as many women have been able to conceive naturally and carry healthy pregnancies through to normal delivery, even after a history of endometriosis and being diagnosed as being “infertile” by a medical professional.

The foci of endometriosis appear as solid, dark, cystic masses. They appear dark-brown due to accumulated iron pigments from repeated bleeds. It is interesting to note that under the microscope the solid masses of endometriosis are composed of endometrial glands and stroma, plus macrophages containing iron pigments, known as Haemosiderin pigments.

Endometriosis is dependent on oestrogen for continued growth and proliferation, with the disease becoming inactive after oophorectomy or the onset of the menopause. One naturopath coined the term that “pregnancy is the greatest cure for endometriosis”, due to elevation of progesterone levels.

Medical Treatments

Suppression of the Hypothalamic-Pituitary-Ovarian axis is routine, through the use of pharmaceutical agents such as GnRH analogues that prevent cyclical sex steroidal changes and endometrial symptoms. Oral contraceptive pills are usually used with a continuous dosage until the menopause.

Danazol is probably the most frequently prescribed drug I encounter with endometriosis. Danazol is anti-oestrogenic, anti-progesterone and has androgenic activity. According to the British National Formulary Danazol has numerous potential side effects.

In addition to these sorts of drugs progestogens could be used, such as Medrooxyprogesterone.

Surgery could be used with laparoscopic ablation of the endometrial deposits and adhesions. Severe endometriosis is usually subject to a combination of hysterectomy and bilateral salpingo-oophorectomy. This procedure involves the removal of uterus, both ovaries and fallopian tubes.

Naturopathic Principles

Oestrogenic lignans should be increased. Also phyto-oestrogens, such as organic soya, miso, red clover shoots, etc should be included.

The naturopathic perspective for management of endometriosis, where many of the symptoms can be brought under control in most cases, includes the need to support the following:

- Hypothalamus regulation
- Pituitary stimulation
- Adrenal function
- Liver function
- Ovarian activity
- Intestinal immune system - MALT
- Blood sugar balance

Patients should aim to eliminate alcohol, sugar, refined flours, hydrogenated oils, dairy products, hormone saturated meats,

caffeine and artificial sweeteners as much as possible.

In endometriosis, the best results can be obtained from a near-vegan diet as possible, bar live organic natural yoghurts. These are beneficial, as long as they don't contain refined sugar. Such products help to promote intestinal bacterial symbiosis. Balanced intestinal bacteria works to maintain a healthy oestrogen balance within the liver, and the neuroendocrine system. *Paeonia* and *Bupleurum* both assist in the oestrogen clearance via the liver.

Emotional Dynamics

We should be aware of the prominent and consistent emotional dynamic possibilities that the practitioner is likely to face with patients with endometriosis. These include:

- Creativity – blocks or ignorance of inherent creativity
- Conflicts with one's parents, both mother and father
- Anger with parents leading to unresolved resentment
- Crisis of self-identity
- Feeling shackled to an intolerable situation – initially unable to see a way out
- Not feeling part of the family structure

With the emotional perspective we can also look to the Emotional Dynamics of the Collarette Chart.

Informed Reading for Patients

An excellent resource and explanatory book on endometriosis is the one by Dian Shepperson Mills & Dr Michael Vernon called *Endometriosis*. It is very reader friendly, quite holistic and written from the natural and conventional perspectives. I like to provide all my endometriosis patients with a copy of information on endometriosis, like a copy of this chapter, and if possible, a loan of the Mills book. This really helps to focus the patients and demystifies the condition, which is extremely important, plus it provides a positive effect by illustrating that the option of surgery or drugs is not the only direction to take.

Herbal Therapeutic Possibilities

- *Nymphaea odorata rhizoma* (primary herbal medicine for usually all cases)
- *Viburnum opulus cortex*
- *Bupleurum falcatum (*for oestrogen clearance and balance, in relation to the liver)
- *Corydalis spp* (for control of pain)
- *Paeonia lactiflora radix*
- *Ganoderma lucidum*
- *Carduus marianus semen*
- *Withania somnifera folia*
- *Vitex agnus castus semen* (primary therapy)
- *Angelica sinensis radix*
- Heavy bleeding – Menorrhagia: *Capsella bursa-pastoris, Trillium pendulum,*
- *Glycchriza radix*
- *Valeriana officinalis radix*
- *Lactuca serrulata folia* (both *Lactuca and Valeriana* are to act as sedatives)
- *Harpagophytum procumbens radix*
- *Hypoxis rhizoma (African potato tuber)*
- *Eleutherococcus senticosus radix*
- *Thuja* (for the reduction of benign growths)
- *Centella, Salvia mitorrhizia, Andrographis, Calendula* for the reduction of adhesions
- *Schisandra, Carduus, Gentiana* or *Bupleurum* to increase transitory oestrogen metabolism and elimination
- Intestinal cleansing (Intestinal Formula No.1 and Nux Vomica Homaccord)
- Castor Oil Packs

Contra-indications with endometriosis

- *Dioscorea villosa radix*
- *Chamaelirium luteum radix* (also this plant is endangered in the wild)
- *Cimicifuga racemosa radix*

Nutrition

- Zinc
- Selenium
- B-vitamin complex, including Pantothenic acid
- Magnesium
- Vitamin E
- EFAs

Homotoxicology

- Pulsatilla 30C
- Gynacoheel™ Drops
- Sepia Compositum to stabilise mood & dyspareunia
- K2F to regulate neuroendocrine system
- Kalium carbonicum 30C
- Vanilla 30C

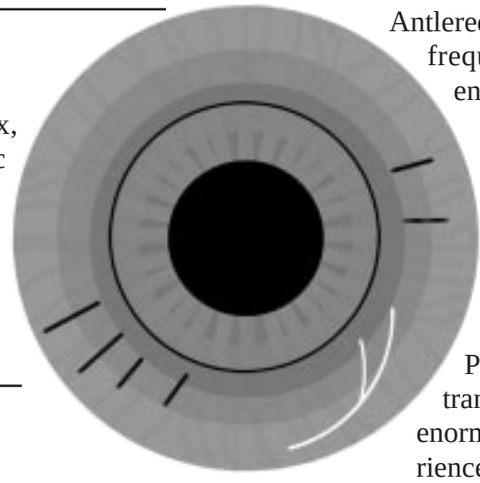
Other Therapies

- Art Therapy
- Counselling
- Acupuncture
- Cranio-Sacral Therapy, including Soma-to-Emotional Release

Iridology & Endometriosis

Transversals

Transversals are one of the most prominent signs in the location of the uterus in endometriosis. Most endometriosis patients have a transversal, or even many transversals within the iris stroma. High magnification is required to identify these. It is rare not to see a transversal in an endometriosis patient.



Antlered Transversal

Antlered transversals are the most frequently observed in endometriosis.

A transversal can also appear with a crypt in the uterine topography.

Pigments

Pigments connected to transversals can indicate an enormous amount of pain experienced by the patient. Large brown or small orange pigment patches are the most frequent *macchia* to be identified in cases of endometriosis. Adjacent crypt/pigment or pigment/transversal combinations indicate endometrial adhesive potential.

Vascularised Vessels & Corkscrew Vessels

These may appear ventrally in the iris as signs for post-laparoscopy adhesions. Meridian energetic disturbances are probable in such cases.

Inner Pupillary Border

The most reliable IPB morphologies from the studies conducted by myself are the Globular sign and also the Partial Atrophic diameter. The Partial Atrophy is consistent with neuroendocrine disturbances such as endometriosis, uterine fibroids, PCOS, Subfertility and extreme menopausal symptoms.

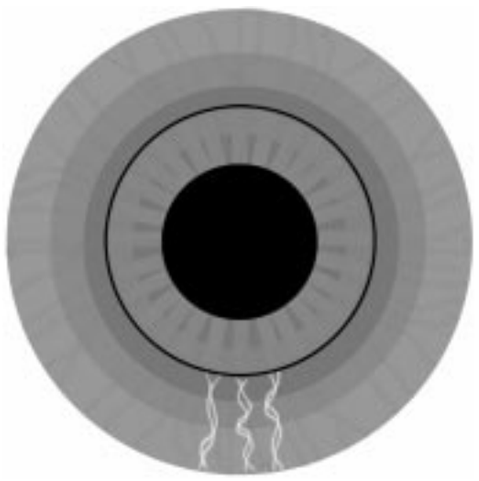
The Globular signs stand out, as the Inner Pupillary Border thickness tends to be very thin and of a delicate appearance. With the Globular morphology we have the correlation to imbalance of the hypothalamus and subsequent PNEI pathway disruption. Intestinal toxicity and alterations of the intestinal immune system are big tendencies of this sign.

Also the presence of the Anchor sign on the IPB usually indicates post-operative adhesions, and this can include endometriosis.

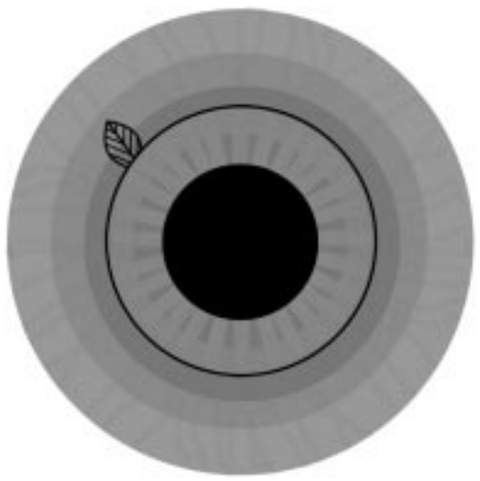
- Partial Atrophy - 80%
- Globular Sign
- Anchor Sign

Pupillary Dynamics

- Frontal flattening at 360º - hypothalamus & pituitary functions
- Inferior temporal flatness illustrating neuroendocrine disruption of the ovaries and uterus
- Ventral flatness of the pupil with ventral distension of the collarette in 2% of cases studied with endometriosis



Corkscrew Vessels



Leaf Lacuna

Embryological Topography

The embryological Uterus is located in the right iris at 200º to 204º and 185º in the left iris. From research conducted from 1999 to 2003. Reliability was 91.3% from 60 cases.

Leaf Lacuna

The presence of Leaf Lacunae in the irides of endometriosis patients suggests a genetic inheritance of the problem. This may have gone undiagnosed in previous generations due to lack of medical awareness.

Leaf lacunae in endometriosis are predominantly located in the topographies for the following glands:

- Hypothalamus
- Anterior Pituitary
- Pancreas
- Ovary
- Uterus

Cryptoid Lacunae

Cryptoid lacunae are rare to see in the iris, so once you've seen one they are instilled within your memory. They are not as rare in cases of endometriosis and can feature anywhere in the ventral section of the iris.

Stress Axis

As the Stress Axis comprises the Hypothalamic-Pituitary-Adrenal Axis (HPA) in the iris, its identification has been seen in over 70% of endometriosis patients.

Mammilations

Transitory mammilations have occurred in only two of the 40 endometriosis cases studied. Their presence motions to the involvement of the intestinal immune system, dysbiosis and autoimmunity. Psychoneuroendocrinoimmunological pathways are indicated. For further information on mammilations please refer to *Immunology & Iridology* and *Iris & Pupillary Signs*. For the emotional perspective please refer to *Emotional Approaches in Iridology*.

Constitutions

The constitutional types we see in endometriosis can be divided as follows from 40 case histories:

Lymphatic	18 cases
Mixed Biliary	15 cases
Haematogenic	7 cases

The Polyglandular or glandular weakness type of constitutional subtype occurred, surprisingly, in only 6 out of the 40 case histories.

Uterine Fibroids & Iridology

Introduction

This type of fibroid is a non-malignant myoma of the uterus, or womb. It is an oestrogen-dependent growth on the smooth muscle of the uterus and can grow to the size of a grapefruit. Usually they are around the size of a marble. Uterine fibroids have a generally slow genesis.

Benign leiomyomas (fibroids) are tumours of the myometrium. They are the most common genital tract tumours, affecting around 20% of women. In Europe around 40% of women over 50 can have fibroids. Despite the prevalent incidence however, they can remain asymptomatic. Rounded, well-defined growths can occur in several locations concurrently. Medically continuous use of GnRH agonists can cause shrinking of the fibroid mass.

Intramural fibroids account for 70% of cases, whilst cervical fibroids are a rarity.

The entire uterus is detoxified and drained by the sacral-iliac, aortic and inguinal lymph nodes. Thus we can see the importance of optimising lymphatic drainage in the management of fibroids, through the utilisation of Skinbrushing, manual lymphatic drainage, aromatherapy, homotoxicology like Lymphomyosot™ or deep breathing exercises.

Embryology of the Uterus

The uterus can be overlooked in the study of embryology, which considering its profound role in procreation is surprising. However, we know that the uterus forms from the descent of the ovary in the 7th week of gestation.

The Main Symptoms with Uterine Fibroids

- Menorrhagia – periods are heavy and prolonged
- Anaemia is often the result due to the blood loss
- Lowered ferritin levels
- Increased oestrogen
- Fatigue
- Torsion of the fibroid can cause tremendous pain
- Pelvic mass is visible and can be palpated in the abdomen and can compress surrounding structures, such as the sigmoid colon
- Subfertility – embryo implantation is prevented and recurrent spontaneous miscarriages can often be seen in the medical history
- When the fibroids are enlarged frequency of urination may increase dramatically
- Constipation could be caused by the mass pressing on the sigmoid colon
- Also, constipation, with particular ballooning of the sigmoid colon could trigger the development of a fibroid, due to oestrogen drainage being at a minimum

Medical Intervention

Fibroids are usually removed surgically, called myomectomy (maintenance of the womb) or hysterectomy (removal of the womb, which should only be suggested after the end of the childbearing years). Adhesions are a common complication after myomectomy.

Medically, specialists tend to prescribe luteinising hormone releasing hormone (LHRH) analogues to prevent the growth of the fibroids.

Also continuous GnRH agonists may cause fibroid regression.

It is recognised that the Contraceptive Pill could increase the size and frequency of fibroids. I have found many patients to be taking the contraceptive pill for between 2 to 15 years before the development or ongoing problems with uterine fibroids. After withdrawal from the pill, the fibroids are diminished in size and severity. It is as if the contraceptive pill can aggravate the underlying condition in sensitive individuals.

As the free oestrogen levels diminish in the post-menopause, uterine fibroids shrink away.

Iridology

Ratti's Research

The iris signs in connection with myomas are very well-documented by Padre Emilio Ratti in Italy with the fruits of research in this area presented at the 1990 1st Simposio Internazionale di iridologia in Venice with the paper on *Iridologia e neoplasie dell'utero e della mammella*. The research was based on over fifty clinical cases. The main iris signs frequently observed in relation to uterine fibroids or myoma according to the research, were lacuna, defect sign, crypt or pigment located in the uterus topography, according to Angerer and Rizzi. These are accompanied in many cases, with an adjacent indented collarette structure. The lacuna tend to have a thickened perimeter. Transversals can act as an inlet into the sign or indented collarette in this area.

Ratti observed that signs for the liver, pituitary gland or thyroid often accompany these uterine signs. Also, the presence of a solitary pigment patch or multiple melanin pigments in the uterus zone often reveals uterine carcinoma for the patient. I would like to add, also, in the family medical background, not necessarily with the individual in the research.

Central heterochromia is common in cases with uterine leiomyomas.

Ratti summarised his research by stating that the iris "should be seen as a non-invasive diagnostic method, capable of identifying precancerous or cancerous situations. Signs such as lacunae, crypts, transversals, solitary or multiple pigments, heterochromia or defects, etc; together with an accurate anamnesis, helps us to refer the patient to more specific and sophisticated examinations, such as CT scans or MRI.

In cases of uterine neoplasms, besides the signs of the iris, we have to assess the hormonal balance by studying ovarian, thyroid and pituitary function. To observe an organ we must always bear in mind all of its anatomical and physiological correlations through the energetics or neuroendocrine system.

Iridology is thus seen as an early investigation that can make a contribution to specialist diagnosis."

Andrews' Research

Collarette

The collarette tends to be what could be termed a *multi-endocrinal collarette*. We have multiple crypts, lacuna and indentations the full circumference of the collarette. The research found these signs, with pigments also, in topographies attached to the external border of the collarette in 29 out of the 44 clinical cases. These topographies included the pituitary gland, hypothalamus, Pineal, thyroid, pancreas and adrenals.

Radii solaris

Radial furrows bisecting the uterus topography can occur in around 25% of uterine cases, with 12 out of 44 cases having such a sign in either right or left iris.

Constitutions

Research has found that Uterine Fibroids are more prevalent in Mixed Biliary types, with 44% of patients falling into the constitutional type. 36% are Lymphatic types with Haematogenic types covering 19% of cases. One patient had Aniridia and embryological disturbance of the PAX-6 gene, so identification of the constitution was impossible to determine.

From the chapter on *The Endocrine Collarette* we can assume that the primary subtype of constitution the practitioner is likely to face is the Polyglandular one.

Embryology & Iridology – Andrews & Lo Rito

Perhaps the most important sign for Uterine Fibroids we have found is from the new research on embryology and iridology between esteemed colleague, Daniele Lo Rito and myself. This topography for the uterus transcends every other access point we have in the iris for fibroids. My research with the enteric embryological reflex for the uterus had been found in accordance with 32 from an initial 36 medically confirmed cases of uterine fibroids.

The new embryological locations for the uterus are as follows:

- 192º in the right iris inside the collarette's internal border
- 165º in the left iris inside the collarette's internal border
- Right iris based on an initial 20 cases
- Left iris based on an initial 16 cases

Larger sample groups and peer review later confirmed these results.

Transversals

Transversals are frequently observed with uterine fibroids and are reliable pointers for the Iridologist to be aware of. I would consider the transversal a prominent fibroid marker. Usually the antlered or root transversal connects to a lacuna or dark pigment in the classical uterine topography in either right or left ciliary iris.

Spiral arteries feed the uterus from surface epithelium through the functional endometrium to the basal endometrium with straight arteries. These spiral arteries lead a tortuous path, like iris transversals, that are often vascularised. The presence of such transversals in the uterine topographies illustrates a deep functional disruption of the uterus and endometrium in the medical history.

Some of my patients have a flare-up with the fibroids during times of great stress. It's as if the fibroid is acting like a barometer for the patient's innate stress monitor. This reactivity to stress can be explained with a Stress Axis in either iris, plus any type of transversal can be involved. For many patients their iris contains numerous transversals, often vascularised.

> A sexual or urogenital reflex transversal can indicate problems with the uterus, ovary or testes. With a transversal located in one of these topographies we have an individual inherently fearful of life's processes that leads to challenges in the self-esteem and loss of identity.

Submerged Transversal

A submerged transversal runs underneath the iris stroma, yet is still visible through the microscope, due to a loss of integrity of the iris fibres. From clinical experience I would consider it a sign for latent tumour development. With new technological advances in iridology equipment and digital resolution, it is now possible to identify submerged transversals as increasingly prevalent in benign uterine fibroid cases.

The patient will tend to have poor sleep patterns and lowered Natural Killer Cell (NKC) numbers. Emotionally, the patient has been deeply affected by bereavement or multiple bereavements. The grief they feel has never been acknowledged, let alone, constructively expressed. This has led to build up of toxic emotions (see Appendices on Toxic Emotions). Constructive therapeutics for a Submerged Transversal and this emotional situation include:

- Homotoxicology protocols
- Flower remedies such as Yerba Santa, Purple Crocus and Snowdrop
- Bereavement Counselling
- Somato-Emotional Release in Cranio-Sacral Therapy

Thorough oncological screening, on a greater than average basis, is highly advised for these types of patients.

Lacuna & Broken Collarette

The identification of a lacuna where we have an interrupted or broken collarette is a serious sign, leading to complications in many endocrine problems such as the pituitary, Diabetes and hypothyroidism, but also the uterus.

Inner Pupillary Border

- Space 22 with hypertrophy or Extroflession
- Partial Atrophy
- Pedunculated morphology – located anywhere

Menopause Axis

The menopause axis in iridology comprises signs in the same iris in the embryological topographical locations for the anterior pituitary, ovaries and hypothalamus. In 44 uterine fibroid patients the menopause axis was present in 18 individual irises.

Emotional Dynamics in Fibroid Cases

The Uterus, through visceroemotional anatomy, can be connected to a deep sense of loss of identity. Feelings of deep-seated guilt can be linked to this, even if the guilt is justified or not. The very personal experience of the patient is predominant over the general perspective. Dr Christiane Northrup in *Women's Bodies Women's Wisdom* relates problems with the fibroids, due to psychosomatic pathways linking back to issues of creativity and imagination. These issues can stretch right across the board of problems or conflicts in this area. According to Anne Quinn in Ireland, uterine fibroids can often link to issues to do with nurturing, particularly in context to the relation of issues with one's mother.

Embryological emotional dynamics of the uterus according to Daniele Lo Rito include:

- Feeling of vulnerability
- Feeling of being unprotected
- The sense of a lack of acceptance in one's family

Fibroid Treatment Protocols

- Bowel detoxification is paramount in uterine fibroids, plus this encourages hepatic drainage and hormonal clearance

- In Russia *Trifolium pratense* flores has a tradition of treating uterine fibroids

- *Vitex agnus castus semen* has a strong tradition in Western herbal medicine for treating uterine fibroids. I have found *Vitex* to be of particular benefit in reducing and resolving intramural and subserous fibroid growths. With these types of fibroids, *Vitex* can be considered as a

solitary primary line of therapy. High doses are often required. This type of dosage in herbal medicine is often referred to as *heroic*. With more deep-seated fibroids *Vitex* tends to be only used as an adjunct therapy

- *Grifola frondosa* – administered as capsules over three to six months duration. *Grifol*a is a revered medicinal mushroom, also known as Maitake. It acts as an adaptogen for the endocrine system, in particular the Pituitary-Adrenal-Ovarian Axis and the curtailment of oestrogen dominance. *Grifola* is indicated in larger fibroids located anywhere through the tissues of the uterus

- *Filipendula ulmaria flores* is a traditional uterine remedy

- *Nymphaea odorata radix* is a primary agent for the reduction of all types of fibroids, abnormal endometrium, cystic ovaries or surgical adhesions

- *Thuja* – 30c & also tincture to control benign growths of hormonal origin

- *Asparagus spp* (Shatavari in Ayurvedic medicine)

- *Turnera diffusa folia*

- *Viscum album folia*

- *Caulophyllum thalictroides radix*

- *Alnus incana* taken in the morning (Gemmotherapy)

- *Zanthoxylum clava-herculis cortex*

- *Viburnum cortex* or *Corydalis spp rhizoma* for analgesic

- *Capsella, Achillea millefolium* or *Medicago sativa* to counter heavy blood loss

- HormHeel™ drops to regulate neuroendocrine system and correct Subfertility

- GynacoHeel™ to directly treat the underlying pathways to the formation of fibroids and other inflammatory pathways of the female reproductive system

- To counter Anaemia: Nettle Tisane, Spirulina, Withania & Barley

- External use: Castor oil as an analgesic and agent to reduce the size of the fibroids

- *Centella asiatica* to counter adhesive processes

Contra-Indications with Uterine Fibroids

- *Dioscorea radix*
- *Hydrastis canadensis radix*
- *Cimicifuga racemosa radix*
- *Chamaelirium luteum radix* (endangered)
- *Angelica sinensis radix*

Physical Therapies

- Reflexology

- Aromatherapy

- Acupuncture for energy balance and pain management

- Cranio-Sacral Therapy with Somato-Emotional Release to rectify any underlying emotional issues and release trauma, encourage endocrine balance and manipulate tissues for organs and glands to find their true location

- Art Therapy to unleash latent creativity and emotional expression

Cervical Dysplasia

Cervical Intra-Epithelial Neoplasia Pap Smear Tests

Grade	CIN I	CIN II	CIN III
Pap Smear Classification	Mild dysplasia	Moderate	Severe dysplasia / cancer
Extent of Epithelium Involved	Third nearest the basement membrane	2/3's nearest the basement membrane	Complete thickness
% Progressing to carcinoma if untreated	1%	8%	20%

Although Cervical Dysplasia is not a particular condition treated by endocrinologists, the disease is included here due to the many similarities with modes of treatment and because of the gynaecological perspective.

Many women with abnormal pap smears consult with naturopathic practitioners, particularly medical herbalists and homeopaths, to garner another approach of addressing their medical and emotional concerns.

Treatment Protocols

The success of naturopathic protocols in the treatment and management of cervical dysplasia can be mixed, due to previous medical intervention or advancement of the disease process. However, with persistence, it is possible for excellent results to be accomplished by the patient. From experience I have always found the exploration of the emotional dynamics as essential with cervix problems.

- As near a vegan diet as possible
- Avoidance of tampons
- Probiotic supplementation (Broad spectrum beneficial bacterium)
- Zinc, Selenium, Vanadium, Germanium, beta carotene, folic acid & vitamin C
- Essential Fatty Acids
- Garlic & organic olive oil vaginal suppository
- *Larrea tridenta*
- *Grifola frondosa*

- *Harpagophytum procumbens radix*
- *Sutherlandia frutescens*
- *Coriolus versicolor*
- *Lentinus edodes*
- *Trifolium pratense flores*
- *Vitex agnus castus semen*
- *Filipendula ulmaria herba*

A clinical trial of 48 patients suffering from cervical dysplasia from Russia in 1993 found that an ointment containing extract of *Filipendula ulmaria*, the original source for aspirin and high in salicylic acid, was very successful. A positive result was found in 32 of the patients and a complete remission was recorded in 25 cases. Ten patients had absolutely no reoccurrence a year after the study.

I would also advise its use internally with cervical dysplasia.

- Pulsatilla – 30c Homeopathic dosage
- Lymphomyosot – Homotoxicology Formula from Heel

Iris and Pupillary Signs

Hypertrophy of the IPB

Cervical dysplasia patients will cover all spectrums of constitutional types, but with the diameter of the Inner Pupillary Border we find that the Hypertrophic IPB is the most frequently observed in 37 out of 52 cervical dysplasia cases.

We also find the Globular morphology of the IPB at 140º or 215º along the ventral IPB.

Cervix Topography

With most Iridology Charts the Cervix is not documented. We always have an exception, and this is the chart by Toni Miller, a naturopath and herbalist from Australia who has worked with numerous gynaecological patients over the years. The cervix is located on the external border of the collarette in a thin strip from 25’ to 35’ in both irides. Although, my experience with cervical dysplasia points to a location similar to that of the adrenal cortex either side of 30’ or 180º.

Embryology & Topography Research

Embryology studies from 2001 to 2004 suggest the cervix to be located between the uterus and ovary at 200º in the right iris and 172º in the left iris. Smear results in such cases are more towards CIN II and CIN III, and in some cases CIN IV.

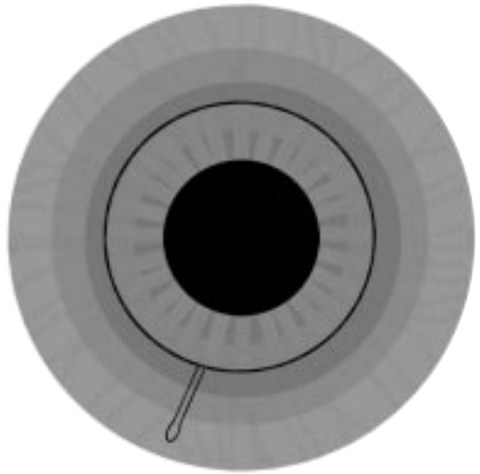
A defect or crypt is the most prominent sign in such cases.

Superficial Transversal

A feint transversal, which appears to be running underneath the main stromal fibres of the iris. This mostly occurs in the classical uterine and sigmoid-rectal topographies. Conditions you will correlate with this sign include dysmenorrhoea, haemorrhoids, hysterectomy, cervical dysplasia or prostitis.

Asparagus Lacuna

In many cases of cervical dysplasia it is possible to locate an asparagus lacuna in the ventral section of the iris. In such cases the smear tests lean towards CIN I & CIN II.



Asparagus Lacuna

Postnatal Depression

Postnatal depression can affect women to many different degrees after pregnancy and childbirth. Sometimes symptoms are relatively minor and pass quickly, most of the time, however, it can be a tremendously debilitating condition. The patient can experience serious mental, emotional and physical concerns.

Postnatal depression can last for many years, sometimes undiagnosed. If diagnosed medically in the UK, then anti-depressants are usually prescribed immediately. In my experience this can be counter-productive, as they mask the causes and there is failure to resolve the problem, because the opportunity is denied. Support from family, friends and medical staff is preferable, as is counselling.

Postnatal depression is included within the remit of the iridology approach combined with endocrinology, not only for the obvious experience of pregnancy and childbirth, with resultant elevated levels of oxytocin, but also due to pan-endocrine aetiology.

Endocrine Factors

Several endocrine pathways combine and emerge as causes leading to and maintaining the depression. Initially, we have the massive hormonal upheaval of not only the pregnancy itself, but also the hormonal swings of labour and then the subsequent recovery and adaptation to the new arrival. Even if all goes well, it is a huge, profound experience and adjustment – hormonally, physically and psychologically. However, if not all goes well, plans are changed and there are either genetic or previous trauma for the mother that is unresolved, then this time of adjustment is compounded and mainly due to adrenal exhaustion – postnatal depression can develop.

In addition to the adrenal exhaustion – which can be detected through bilateral pupillary reaction with slow reaction to illumination, and also through a 24 hour salivary adrenal stress test very reliably – we will probably find that the liver's actions in regard to hormonal filtering and clearance have been impaired, thyroid function could be borderline underactive – check the basal body temperature for two to three weeks and always check the iris immediately. Hyperprolactinaemia could be developing if stress was amplified and when the mother does not breastfeed. In addition to this blood sugar levels will probably be unstable and erratic due to the liver impairment and adrenal exhaustion, this alone can trigger postnatal depression in susceptible individuals.

Never Underestimate the Birth Experience

The patient's own birth experience may play a profound role in the development of her birthing experience with her own baby and the development of postnatal depression (PND). Birth is a deeply profound psychological, spiritual and physical experience that has such an expansive bearing on

the rest of our lives. I thoroughly agree with research brought forward by Dr Michel Odent on the experience of birth and related areas.

The exact experience of the birthing process can trigger PND due to subtle or graphic alterations via the psychoneuroendocrine pathways. The following types of birth can all trigger Postnatal Depression, especially when we have a genetic tendency:

- Separation between mother & child (in both the physical and emotional sense)
- Caesarean Section
- Inducement
- Forceps Delivery
- Administration of an epidural
- Long Labour

A difficult birth and the type of experience involved are all identified through signs in the iris in the majority of cases (see Differentiation of Time Risk Signs – Andrews, AIRJ Volume 1, March 2000 & *Emotional Approaches in Iridology*, 2004).

A previous sexual trauma experienced by the patient could be the trigger for the postnatal depression. Particularly if the experience has never been shared.

Some women describe that they had a sense of bereavement after the birth. The bereavement they feel is for their previous life, pre-children. In such cases Honeysuckle & Purple Crocus flower remedies are indicated, as is Bereavement Counselling.

Emotional Symptoms

The emotional or psychological symptoms or feelings generated by the postnatal depression include the following:

- Hopelessness
- Guilt
- Detachment
- Overwhelmed
- Crying spells
- Resentment
- Lack of initiative
- Agoraphobia

With such feelings cranio-sacral therapy, counselling, homeopathic Aconite 30c, visualisation techniques, art therapy, flower remedies and even Colourpuncture can prove to be very adept helping to bring the patient to resolve the underlying issues.

Flower remedies used can include Elm, Star of Bethlehem, Purple Crocus, Snowdrop, Mariposa Lily, Honeysuckle & Hypericum.

Physical Symptoms

The physical changes exerted by a bout of postnatal depression can include symptoms such as:

- Insomnia
- Lethargy
- Extreme sugar cravings
- Hyperprolactinaemia
- Dysglycaemia
- Heartburn
- Respiratory infections
- Lack of libido
- Neuromuscular cramping in the extremities
- Dizziness
- Paresthesia

Nutritional and medicinal herbal support can be vital and provide solid support and help to correct any underlying imbalances such as a congested liver, blood sugar changes, adrenal exhaustion, impaired serotonin synthesis or borderline hypothyroidism.

Nutrition

The status for the following is paramount in postnatal depression cases:

- Folic acid
- Chromium
- Pantothenic acid
- L- tryptophan
- Zinc
- Essential Fatty Acids
- Magnesium

L-tryptophan, the amino acid, is the precursor for serotonin and also melatonin synthesis. Essential Fatty Acids such as those in Spirulina, Borage seed oil, Hemp seed oil, Evening Primrose oil and Flax oils assist with adrenal support, thyroid function, liver clearance of hormones, lifting mood and mental clarity, cognitive performance, balanced and stable blood sugar levels and thus have anti-depressive action.

Chromium, folic acid and magnesium exert the similar actions on all the relevant pathways. Magnesium and chromium and Vitamin B5 – Pantothenic acid give extra support for the adrenal glands.

Herbal Medicines

- *Glycchriza glabra radix*
- *Withania somnifera folia*
- *Centella asiatica folia*
- *Hypericum perforatum flores*
- *Paeonia lactiflora radix*
- *Allium ursinum*
- *Sceletium*
- *Cordyceps*
- *Verbena officinalis*

The inclusion of *Glycchriza* is due to the fact it is *the* precursor to adrenal gland functions, in addition to balancing blood sugar and thyroid functions. *Withania* works as an adaptogen and exerts adrenal support, bolsters and balances hypothyroidism, plus can be used to balance sleep patterns, energy, blood sugar balance, function of the hypothalamus, prolactin and works as an anti-depressant.

The use of *Hypericum* would be expected in postnatal depression, however, it is not only advised here for its anti-depressant action, but also its ability to help with the hepatic clearance of hormonal residues.

Sceletium is the premium natural herbal medicine. It has an anti-depressant and anti-anxiety bar none, with no apparent adverse reactions or long term toxicity concerns. *Rhodiola rosacea* is also of benefit in the management of stress and anxiety.

Paeonia helps to bring about hormonal balance, supports adrenal function and

enhances hepatic functional pathways. *Centella* works in a similar way, in addition to having anti-depressant activity. *Allium ursinum*, *Escholszia* and *Verbena* officinalis all support the nervous system, adrenal functions and improve liver performance.

Iridology & Postnatal Depression

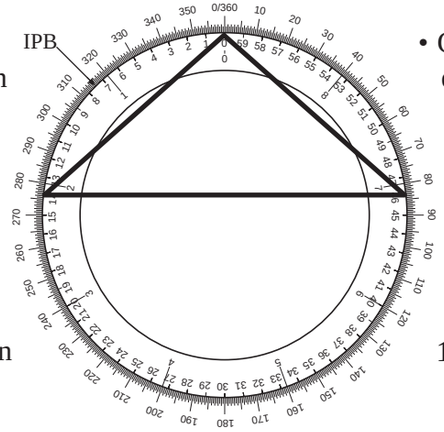
- In 30 patients with postnatal depression, 20 were of Mixed Biliary irides. From this small study we can see that approximately 60% of PND patients will have this type of genetic iris colour. Postnatal depression should be included as a tendency in the Mixed Biliary constitutional type. Haematogenics accounted for 4 of the 30, with Lymphatics contributing 6 of the 30 studied individuals.

- Also present was a Depression Axis on the Inner Pupillary Border, in 22/30 cases.

- Frontal Indentation of the Collarette is present – usually in the left iris in 24/30 of the patients

- A Stress Axis is often present. It is a unilateral collection of signs in 19 of the 30 cases.

- Bilateral mydriasis, as discussed, with slow reaction to changes in illumination is present in 28 of the 30 cases.



Depression Axis

- Birth Trauma sign, usually unilateral in 24 of the 30 patients studied

- Multiple brown pathochromia (Psora) in the ciliary iris in 14/30 cases

- Multiple crypts in the collarette or throughout the ciliary zone in 12/30 cases

- Radial Furrow or Leaf Lacuna in the classical topography for the Medulla oblongata is present in 12 of the 30 patients

- Embryological topographical crypt in the new location for the adrenal glands in 21 of the 30 cases

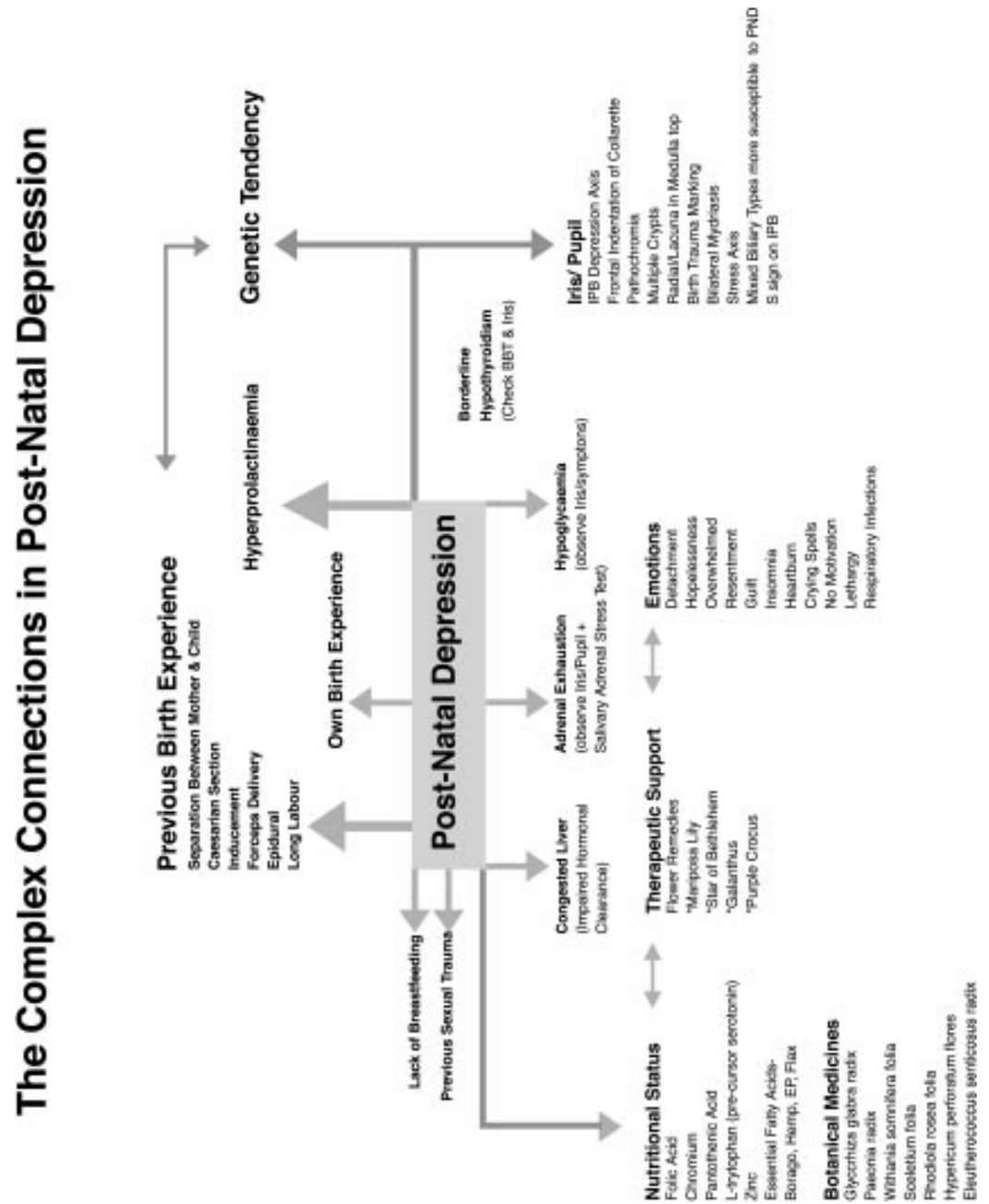
- Presence of the S sign on the IPB in 9 of the 30 cases

- Pancreatic lacuna, pigments, indentation of the collarette in new, embryological and classical ciliary attached to the collarette locations in 25 of the 30 cases

- Central heterochromia present in exactly 50% of the cases

  - Sectoral heterochromia present in 2 of the 30 cases

- Partial atrophy of IPB in 14 of the 30 cases



The Menopause Axis in Iridology

The Menopause Axis is an axis of signs I identified with our research into embryology and iridology. It is of a particular interest to women, because with this axis, in most cases, you will see a predisposition to adverse or extreme menopausal symptoms.

From clinical experience this extreme dispensation is amplified with a history of taking the contraceptive pill. Indeed, the patient could well have experienced side effects with the pill – depression, development of tumours or cysts, mood swings, blood sugar changes, migraines and many other symptoms.

In the UK at the present time, the vast majority of patients that refer for consultation with natural medicine practitioners of varying disciplines are in fact, female. According to Watkins *et al* this is mirrored by the demographics of my own practice, as I used to have an almost 90% majority of females and 10% males. Over the previous two years, with more general public awareness and acceptance of natural or alternative medicine, I have seen with my patients an emphasis on 73% of females and 27% males.

So you can see from this that I have had many female patients either taking the contraceptive pill, withdrawing from the contraceptive pill, pre-menopausal, in the menopause or with a history of hormonally-dependent breast tumours.

Excellent information on the menopause is readily available via books and the web. I would advise the books by Dr Christiane Northrup, *Menopause Naturally* by Kitty Campion and the menopause books by Dr Marilyn Glenville are very useful references and inspiration for practitioner and patient alike.

The Axis comprises embryological signs for the:

- Hypothalamus
- Anterior Pituitary
- Ovary

The signs are usually:

- Crypts or defects
- Stairstep lacuna

This Menopause Axis differs from other types of Axis, because it tends to be bilateral in most cases. Due to the nature of the signs and the location involved we can assert that the axis develops *in utero*. Oestrogen dominance can be a large clinical factor.

Symptoms involved in the menopause include:

- Hot Flushes
- Hot Sweats
- Depression (elevation of melatonin)
- Loss of libido
- Vaginal dryness
- Thirst

- Disrupted blood sugar levels
- Anxiety
- Headaches
- Joint pains
- Muscular fatigue
- Zinc deficiency
- Essential Fatty Acid Deficiency
- Vitamin E Deficiency
- Chromium deficiency
- Dry Skin
- Hypothyroidism
- Oedema
- Constipation
- Mood Swings
- Reduction and disappearance of ovarian cysts
- Disappearance of uterine fibroids
- Oligomenorrhoea
- Sugar Cravings
- Lethargy
- Memory Loss
- Poor concentration
- Waking up at 4am in the morning to urinate
- Lack of motivation and initiative
- Osteopenia
- Weight gain (elevated leptin)

The inclusion of the hypothalamus, anterior pituitary and ovary in the menopause axis should be self-explanatory. Reference to the chapters covering these glands in this book is advised if further clarity is required. However, I feel a further look at other possibilities that enhance the meaning of the Menopause Axis could be helpful.

Blood Sugar Balance

As we can see from the list of frequent symptoms that could occur in the menopause many of these are the same with a person with a tendency to erratic blood sugar levels – dysglycaemia. From the research with nearly 1500 patients with erratic blood sugar levels (refer to chapter on *Hypoglycaemia and Iridology*), I have concluded that if the patient has a genetic tendency to blood sugar disturbance, as identified through the iris, there is an increased risk to extreme menopausal complaints and general hormonal system.

The long-term blood sugar picture has a profound physiological effect on the endocrine system that often results in menopause being a medical concern, rather than a normal hormonal and life transition and adjustment.

Blood sugar disruption signs in the iris and sclera can enhance the meaning of the Menopause Axis.

Thyroid Function

During the menopause a latent hypothyroidism, which has been a borderline hypothyroidism up to that point, can really come to the fore and produce signs like weight gain, dry skin, hair loss, loss of eyebrows, depression, oedema, and constipation. In most cases the hypothyroidism could still be borderline and the hypoactivity may not show on any blood tests.

In these cases basal body temperature testing over a month is clinically indicated, in order to clarify the hormonal changes.

Previous history or incidence of hypothyroidism predisposes to menopausal problems. The thyroid in communication with the hypothalamus sets the body's metabolic rate and temperature.

Check for Thyroid Iris Signs:

- Squared Morphology on the IPB
- Embryological Topography for the Thyroid
- Thyroxine Lacuna or Indentation of the Collarette at 90º or 270º, attached to the collarette in either right or left iris

Liver Function

The liver's endocrine role is vitally important entering the menopause. Previous hepatic pathologies or congestion could interact with the blood sugar levels, thyroid function and general hormonal communication. The liver helps to organise, filter and detoxify an excess of hormones in the system. As women enter the menopause, endocrine research has revealed that the liver actually takes on the production and storage of oestrogen, instead of the ovaries. In fact the adrenal glands join with the liver in this activity.

With this in mind we need to look at any liver signs in the iris, sclera and Inner Pupillary Border (refer to Hepatic Immunity in *Immunology & Iridology*).

Therapeutic Protocols

Herbal Medicinal Support Possibilities

- *Vitex agnus castus semen*
- *Angelica sinensis radix*
- *Dioscorea villosa*
- *Pfaffia paniculata*
- *Withania somniferum*
- *Cimicifuga racemosa radix*
- *Centella asiatica*
- *Salvia officinalis*
- *Urtica folia*
- *Eleutherococcus senticosus radix*
- *Linum olea*
- *Cannabis olea*
- *Helianthus anuum*
- *Carduus marianus*
- *Arctium lappa radix*
- *Zingiber officinalis*
- *Glycrrhiza glabra radix*
- *Lycopus*
- *Bupleurum faculatum*

Nutritional Support

For General maintenance – *Spirulina*

For Detoxification - *Chlorella*

Also foods rich in the following:

- Zinc
- Vitamin E
- Vitamin B5 – Pantothenic acid
- Vitamin B12
- Chromium
- Magnesium
- Essential Fatty Acids
- Iodine
- Phosphorus

Physical & Emotional Techniques

- Advanced Reflexology
- Cranio-Sacral Therapy

- Art Therapy
- Yoga
- T'ai Chi
- Pilates
- Aromatherapy
- Colourpuncture
- Acupuncture

Regular maintenance treatments with any or a combination of these are of enormous value to the patient's emotional health, sleep patterns, energy and circulatory system.

Endocrine Emotional Energetics

We say that hormones can be classified as emotional responses in biochemical form. Holistic and modern understanding of psychoneuroendocrinoimmunology offers confirmation to this view. As with general organ and emotion correlations it is possible to present similarities with the emotional energetics of each endocrine gland or pair of glands.

Also refer to *Emotional Approaches in Iridology* book and *Emotional Dynamics of the Collarette* Chart

Gland	Emotional Patterns
Hypothalamus	Pleasure, fear of shame, pain, self-worth and validation, control, panic, defence, Centre of the limbic system
Pituitary	Balance, pressure, fear of wisdom, in/dependence issues
Pineal	Rhythm, fear of unknown, over-analysis, expansion, etheric awareness
Thyroid	Affection (father/male), injustice, expressive ability
Thymus	Fear of failure, nurturing, mother energy, giving and receiving love, centre for the emotional heart
Pancreas	Betrayal, love exchange, indecision, long-standing issues of emotional pain, expressive warmth
Adrenal Glands	Fear of judgement, parental fears, self-esteem, self-criticism, panic, fear of conflict, danger
Ovary/Testes	Identity, creativity, power, self-worth
Endocrine Kidneys	Resentment, storage of emotions, energy cysts, decision-making

Appendix 1
Thyroid Temperature Chart

Appendix 2
Taking Your Basal Body Temperature

Using a medical thermometer, take your temperature first thing in a morning before you get out of bed. You can take your temperature by placing the thermometer under your arm, but preferably by placing it in your mouth. Oral temperature readings are more accurate, in relation to the varied functions of the thyroid and hypothalamus.

Whichever way you decide to take your temperature, it's important to continue to take it the same way every time.

After 1 minute remove the thermometer and record your temperature on the chart.

If you experience any particular symptoms on that day, indicate these on the chart too.

Unless otherwise indicated by your practitioner, there is no need to take your temperature every day of the week, as long as you take it for 4 consecutive days each week. Repeat for four to six weeks, unless specified, and return the chart with results to your practitioner.

If using the four consecutive day method you need to stick to the four same days in the week in subsequent weeks of testing.

Appendix 3
Thyroid Gland Study Results

Original Thyroid Gland Study Results as published in the Advanced Iridology research Journal, Volume 2, November 2000

Hypothyroidism Study of 42 Medically Diagnosed Cases

Iris Sign	**Cases**
Lacuna (Thyroxine) Right Iris @ 15	22
Lacuna (Thyroxine) Left Iris @ 45’	8
Total Lacunae (Thyroxine)	**30**
Crypt(s) Right Iris @ 15’	10
Crypt(s) Left Iris @ 45’	5
Total Crypts (Thyroid Zone)	**15**
Hypophysis Sign (Major/minor rays (radii), lacunae, crypt, pigment)	20
Pigmentations (In thyroid zones right and left)	10
Hypothalamus Sign (Radii solaris, lacunae, crypts, pigment)	8
Gastric Ring (“Hypoactive & hyperactive”)	9

Iris Sign	Cases
Collarette Indentation @ 15’ in right iris and 45’ in left iris	13
Skin Ring (Scurf Rim)	6
“B3 Bulge” (Lunula)	6
Time Risk Marking (Criteria = one to two years before onset of underactivity as noticed by patient; not necessarily diagnosed medically)	13
Hepatic Markings Right and left iris	28

Pupillary Dynamics	Cases
Pupillary/Iris Flight (Superior temporal direction)	5
Mydriasis	10
Miosis	6
Space Sign 7 on Inner Pupillary Border	30
Hypertrophy of Inner Pupillary Border	12
Partial Atrophy of Inner Pupillary Border	7
Overall number taking Thyroxine	32

Hyperthyroidism Study of 10 Medically Diagnosed Cases

Iris Sign	Cases
Lacuna (Thyroxine) Right iris @ 15’	2
Lacuna (Thyroxine) Left iris @ 45’	1
Total Lacunae	**3**
Crypts Right iris @ 15’	7
Crypts Left iris @ 45’	2
Total Crypts (Thyroid Zone)	**9**
Hypophysis Sign (Lacuna, crypt, pigment, radii)	7
Pigmentations (In thyroid zones)	4
Time Risk Sign (@ 1 or 2 years before onset of illness as noticed by the patient; not necessarily medically diagnosed)	6
Hepatic Markings	6
Hypothalamus	2

Pupillary Dynamics	Cases
Pupillary Flight (Superior nasal to inferior temporal direction)	4
Mydriasis	8
Space 7 on Inner Pupillary Border	5
Total number taking Carbimazole	5

Appendix 4
Sub-Lingual Delivery

Rarely used as a medical technique these days; but is of immense value especially in the administration of herbal therapies and naturopathic detoxification procedures. If placed under the tongue a substance is readily absorbed through the buccal mucosa, the lymph and numerous blood capillaries just under the tissue surface. In fact sub-lingual substances come into closer contact with blood vessels than any other route.

Once in the blood then substances can circulate to the target tissue or cells; without hindrance or negation from stomach acid, fermentation and chemical changes from bypassing the liver. Through this method of application, smaller amounts of herbs etc are required due to the high concentrations readily reaching affected areas of the body. A substance can be absorbed into the bloodstream as quickly as when injected by a doctor with a hypodermic syringe - with less pain or fear!

In many eastern and Mediterranean countries swishing cold pressed plant oil(s) around the mouth, especially under the tongue for 15 minutes stimulates detoxification. The oil isn't swallowed during this time. Then 30 to 40 minutes later the procedure is repeated for another 15 minutes. The oil is expelled from the mouth on both occasions - never swallowed. During this process the oil can change colour, to white, yellow, green or brown or thicken. You may even have an unpleasant taste appear in your mouth (if this happens expel the oil) - all these are signs of detoxification of unrequired toxins, waste cellular debris, fats, cholesterol etc - it is easy to do and very effective. Many doctors around the world working with degenerative diseases are using these methods as part of any therapeutic protocols.

The oils need to be cold pressed, extra-virgin and organic. Try: olive oil, sunflower oil, flax seed oil and hemp seed oil particularly. Repeat the procedure once a day - in the morning preferably for one to two weeks.

I have found sublingual delivery and the oil cleanses beneficial personally and have seen the efficacy of herbal medicines improve clinically.

Appendix 5
Medicinal & Nutritional Mushrooms
An Endocrine Perspective

Medicinal mushrooms are well known for their nutritional and immune boosting properties. However, not many practitioners utilise them for their role in the balance of the neuroendocrine system and associated diseases, except for mainly *Cordyceps*.

Coriolus, Ganoderma lucidum, Lentinus edodes, Cordyceps, Chaga, etc can help to balance prolactin and growth hormone secretions, assist in treatment of various anterior pituitary tumours, Craniopharyngioma, thyroid – hypo and hyper, Hashimoto's, Diabetes mellitus, hypoglycaemia, neuroendocrine/immune system exchanges, hormonally dependent breast tumours, polycystic ovary syndrome, cervical dysplasia, vestibullitis, endometriosis, liver function improvements and support in relation to hormonal clearance and synthesis, Subfertility, hormonal menstrual balance, PMT, Mastalgia and *Grifola frondosa* or *Maitake* mushroom can help in the treatment of uterine fibroids.

A Summary of the potential and uses for Medicinal and Nutritional Mushrooms

Introduction

This long article evolved from a short information sheet for patients, as my own clinical use of medicinal and nutritional mushrooms has proliferated. In the UK today we find that there is a real lack of information on medicinal uses of mushrooms readily available to the public, patients, herbal or naturopathic practitioners, doctors, consultants or nurses – I hope what is produced here can assist in bridging those gaps and the following is of some practical use or inspiration. I have attempted to be concise and cover all angles in relation to expertise and medical knowledge, no doubt there is too much information for some or too little for others, if this is the case then I would suggest looking at the works of the following authors in this area – Christopher Hobbs, Dr Halpern, Ken Jones, David Arora and for recipes and the pure enjoyment of mushrooms look at *A Passion for Mushrooms* by Antonio Carluccio. Failing that, you can always contact myself.

Ganoderma lucidum - Reishi Mushroom Extract

Ganoderma lucidum is one of the most clinically researched medicinal and nutritional plants we have on the planet today. It also has a depth of traditional uses, which from my meagre knowledge, can only be rivalled by several other herbal therapies. *Ganoderma* or Reishi mushroom is a revered panacea in many systems of Oriental Medicine, with particularly reliable studies, espe-

cially in reference to bolstering the immune system, from both China and Japan. The Chinese name for *Ganoderma* is *Ling zhi* and it is in China where *Ganoderma* has a reputation thousands of years long for promoting longevity.

The Latin name *Ganoderma* translates as meaning shining skin, as in the appearance of the mushroom. In the wild *Ganoderma* will tend to grow naturally on Oaks and Japanese plum trees. There are many species that grow all over the world. Despite the need for the mushroom to have a habitat high in carbon dioxide, this funghi helps to elevate oxygenation saturation levels in the blood. Some texts hail Reishi as the mushroom of immortality!

Ganoderma is most well known and probably utilised in both natural and orthodox medicine in the treatment of cancers. *Ganoderma* is one of the highest sources of the vital trace mineral Germanium. Studies have found cancer patients to have very low levels and deficiencies of Germanium. Also like most medicinal mushrooms, *Ganoderma* is high in polysaccharides that help to stimulate many aspects of immune functions, including the number and increased activity of Natural Killer Cells, which are anti-viral and tumour growth inhibitors. *Ganoderma* is often administered to counteract against any of the possible negative affects of both chemotherapy and radiotherapy in cancer care. *Ganoderma* helps to protect against ionising radiation if taken before and after exposure.

I have personally found that any cancer patients undergoing these treatments taking medicinal mushrooms such as *Cordyceps, Trametes, Lentinus* or *Ganoderma* have endured significant lowering of side effects, no nausea and more stabilised blood results for platelets, neutrophils, etc. Studies have also shown that the polysaccharides in *Ganoderma* help to stimulate the macrophages to produce more tumour-necrosis factor (TNF-x) and the spleen to produce more Interleukins. *Ganoderma* has been demonstrated to have anti-tumour activity in cases of carcinoma of the breast, liver, lung and bowel.

With this in mind it is very important to realise, I feel, that *Ganoderma* is bio-chemically high in adenosine which inhibits platelet aggregation and also nutritionally high in the trace minerals of germanium, selenium, vanadium, chromium, plus the general ones such as magnesium, calcium and zinc.

There are many other uses for *Ganoderma*, which, perhaps, are not that well known about, but are scientifically and traditionally documented. For example, *Ganoderma* has antihistamine influence on the system, constituents of *Ganoderma* act as a precursor to hormonal synthesis and the mushroom is particularly supportive of the adrenal functions, thus helping to counteract the impact of stress on the physical and emotional bodies. We also have to consider that *Ganoderma* helps to balance both cholesterol and blood pressure levels. In addition to this due to the increase in natural killer cells this plant helps to stimulate the production of interferon in the liver, which enhances the body's defences against viral attack. It also has antifungal potential, with the emphasis on controlling *Candida* overgrowth, plus controlling bacterial strains such as *Staphylococci, Streptococcal and Bacillus pneumoniae.*

Ganoderma has proven to be of enormous benefit in the management and treatment of gastric and duodenal ulcers, allergic rhinitis, insomnia, recurrent Otitis media and tonsillitis, tachycardia (such as the palpitations you can experience with panic attacks), shortness of breath, coughs, sarcoidosis and altitude sickness (it is used by many mountaineers for this very reason) or Jet Lag, due to its support of the Pineal functions and subsequent serotonin and melatonin levels.

Some research has shown *Ganoderma* to help counteract caffeine addiction and help improve liver functions - helping with anaemia, Hepatitis B and C infections plus improving the production of interferon and dampening the response to allergens. In one study from China in 1994 a doctor had a cure rate on 70,000 toxipathic hepatitis patients of 90%, with the use of a liver softening and detoxification soup containing Reishi mushroom.

Ganoderma is a great aid in managing autoimmune Diabetes, due to its adaptogenic influence on the immune system and also by reducing and balancing the blood sugar levels.

On the topic of the immune system *Ganoderma* really comes into its own as it promotes healthy function of bone marrow, improving white blood cell counts, which is particularly helpful in any exposure to radiation. Oriental research has indicated its positive contribution in the treatment of Acute myeloid leukaemia. I have found its long-term usage to be an excellent introduction to the treatment plan of autoimmune conditions such as Rheumatoid Arthritis and Systemic Lupus, again this may be due to its adaptogenic action on the immune system.

It is interesting to note that a study of 2000 patients taking *Ganoderma* in China in the 1970s with chronic bronchitis showed improvement across the board of age groups by 60-90%, with the over-60s the most significant age-group improving. With any infection or chronic illness a person's appetite can diminish, however, *Ganoderma* helps to bolster and improve appetite, possibly due to its high levels of natural antioxidants.

In addition to the immune system, *Ganoderma* also has a positive role to play in the management of anxiety syndromes (due to its general "cooling" on the liver and nervous system), depression and panic attacks. As mentioned previously *Ganoderma* has been shown to support the adrenal cortical functions and the adrenals are always central to any cases of either depression or panic attacks.

The adrenal support leads onto the next area of *Ganoderma's* impressive list of properties as I use it a lot with endocrine or hormonal conditions, usually involving the adrenals with other endocrine glands such as the pituitary or thyroid, such as Hyperprolactinaemia, Sub-fertility, Polycystic ovary syndrome (PCOS), Fibrocystic breast

disease (FBD), Adrenal stress syndrome, Uterine fibroids, PMT, hypothyroidism or Amenorrhea. *Ganoderma* supports the Hypothalamic-Adrenal axis (HPA).

Ganoderma has also been used in some trials for the degenerative eye condition called Retinitis pigmentosa.

Dosage:

General Conditions - 1 capsule twice a day
Acute conditions - 2 capsules twice a day
Chronic conditions - usually 3 capsules twice a day, refer to practitioner

All to be taken before meals.

Can also be eaten freely, although exact dosage is difficult to gauge via this mode of ingestion.

Tincture: 25 to 50 drops twice to thrice daily before food

Contra-indications:

None known or documented.

Long-term usage appears to be perfectly safe and advisable.

Although from experience I would err on the side of caution with the administration of a high dosage of *Ganoderma* in those prescribed beta-blockers or taking steroids for inflammatory bowel conditions such as Ulcerative Colitis. Do not take more than three capsules daily in such cases.

Cordyceps sinensis

Also called the clubhead fungus *Cordyceps* was only used in ancient China in the Emperor's palace. It has widespread historical use throughout China, plus many other countries such as Nepal and Tibet. It is used to strengthen and rebuild the body after exhaustion or long-term illness according to an article in the New York Journal of Medicine in 1843. *Cordyceps* has a bizarre natural history, and it can thrive in habitats which have little oxygen, such as boggy lands or at altitude in mountain ranges. Scientists have discovered that *Cordyceps* uses oxygen in a highly efficient and effective way.

It has been transposed that it is these properties, which can have such a profound influence on the human systems.

Cordyceps has been proven to improve athletic and general physical endurance and stamina. In the past Chinese athletes have taken to using *Cordyceps* to enhance performance. This is probably because the nutritional and biochemical content of the funghi helps to increase the cellular exchange of energy.

Many serious clinical studies have been performed with *Cordyceps* in China and other countries; it has been found to be of possible benefit in a range of conditions, including Angina pectoris and cardiac arrhythmia - if taken long term. Studies have also found that *Cordyceps* helps to lower levels of the bad fats in the blood, called LDLs and increase the number of

HDLs in the blood. This is probably achieved through the enhancement and augmentation of liver functions and performance, which control fat, protein and cholesterol metabolism.

Cordyceps can be used to help regenerate liver cells and tissues after cirrhosis or Hepatitis B infection, plus post-viral syndromes such as Chronic Fatigue Syndrome. Another study of 51 patients with chronic renal failure found that the administration of 3-5mg of *Cordyceps* daily normalised kidney and immune functions in 28 of the patients.

Diabetic patients taking *Cordyceps* for three months @ 3g daily had blood cells with significantly higher levels of, what is considered, the "anti-aging" enzyme superoxide dismutase.

Cordyceps is revered in Traditional Chinese Medicine for being a supreme anti-asthmatic tonic and for regulating menstruation at all ages. It stimulates endocrine communication, which I have found helpful for patients with Endometriosis, PCOS, Sub-Fertility, low libido, dysmenorrhoea and PMT.

Like many medicinal mushrooms, *Cordyceps* seems to infer an adaptogenic action on the neuroendocrine and immune functions of the body. *Cordyceps* is rich in those polysaccharides that demonstrate anti-tumour activity. Indeed, some studies show improvement in patient's T-cell ratios, Natural Killer Cell function, immunoglobulin levels, serum complement and liver function after taking dried *Cordyceps* for a period of time.

Dosage:

1 to 3 capsules once to twice daily.

Contra-indications:

None documented or noted

Lentinus edodes - Shiitake Mushroom Extract

The species name "edodes" means edible. These beautiful light amber fungi are found on fallen broadleaved trees, such as chestnuts, beech, oak, alder, maple, mulberry or walnut. They are now widely cultivated in the west. Be aware that this is an extremely delicious mushroom!

Lentinus is high in Vitamin C, ergosterol the precursor for Vitamin D, B2, calcium, selenium, zinc, germanium, potassium, manganese, magnesium, iron, copper, and phosphorus. Water-soluble liganans also modulate immune activity and isolate viruses. The mushroom is particularly high in potassium and also the other "tumour fighters" such as the trace minerals of germanium and selenium.

Lentinus contains lentinan, a polysaccharide, and along with other polysaccharides this increases activity of the immune system's macrophages. Also the phagocytotic action of the RES can be enhanced. Lentinan was first isolated and tested for its anti-tumour effects in 1969 at the National Cancer Institute of Japan. HPA support, serotonin, histamine and adrenaline and nora-

drenaline productivity are all balanced from taking *Lentinus*.

In Japan, lentinan is given to chemotherapy patients to counteract side effects. In fact, it has been found to lead to increased survival times from cancers generally. Lentinan does not attack cancer cells directly but produces anti-tumour activity by activating different immune responses, such as NKCs and lymphokine activated cells. Lentinan can activate the normal and alternative pathways in the complement system and can split C3 into C3a and C3b, enhancing macrophage activation. The main type of cancers *Lentinus* would be indicated for are gastric, breast, liver, colo-rectal and lymph nodes. In Japan, Korea and clinics in Europe Lentinus is administered through IV with chemotherapy or just on its own.

Lentinus can work on boosting immunity by enhancing both the humoral and cell-mediated immune responses.

In Japan Lentinan is used to treat LNKCS - or Low Natural Killer Cell Syndrome - a condition that seems to be the same as Chronic Fatigue Syndrome in the West.

*Lentinu*s is also very rich in the B-vitamin choline, which regulates and inhibits the prostaglandin release from macrophage cells in cases of inflammation. From this information you can see why *Lentinus* has a traditional use in the treatment of arthritic conditions from countries such as Mexico, China and Japan.

To emphasise its role as an immune stimulant, or more accurately, a modulator, *Lentinus* can be vital in the treatment of recurrent bacterial or viral infections, systemic *Candida albicans* overgrowth, tooth decay and gum disease and also a study of 42 patients with Chronic Viral Hepatitis B showed overall improvements after taking a course of Lentinan.

Lentinus can be taken safely in the long-term.

In essence *Lentinus* modulates both immune and endocrine systems, developing homeostasis.

Dosage:

Liquid Extract: Take 30 drops twice a day before food. In more extreme cases the dosage may need to be higher and may have to be given through IV drip. Always refer to a competent and experienced practitioner before embarking on a course of treatment using medicinal mushrooms.

Shiitake mushrooms can be eaten freely. You can also cultivate your own, many growing kits are now commercially available.

Contra-indications:

- The activity of *Lentinus* can be reduced if the patient is taking thyroxine or hydrocortisone.

- *Lentinus* may cause dermatitis in prone individuals, but this has been documented very rarely.

- Caution should be applied in the use of *Lentinus* if the patient has Ulcerative colitis and is taking steroid-based prescription such as Azacol.

- A patient may notice some initial diarrhoea for the first couple of days after taking *Lentinus*. Cases are mild and it is usually a detoxifying sign, so the patient needs to be made aware of this for reassurance.

Coriolus versicolor - Turkey Tails

This is one of our most tasty wild mushrooms and certainly one of most potent indigenous plant medicines. Most of us are blissfully unaware of the existence of Turkey Tails growing nearby, let alone its many health benefits. *Coriolus*, or *Trametes versicolor*, grows on decaying wood logs such as Ash, Birch, Elder, Hawthorn, Oak, Yew, Pine, Hazel or Wild Pear in a characteristic fan-shaped, multi-coloured cap in overlapping clusters, hence its common name. The top of the cluster is usually zoned in shades of brown, cream, blue or grey. The underside of the cap is white. It is a common mushroom the world over. In China it is called Yun-zhi.

Many of the public and health practitioners are unaware that it is an anti-cancer drug, which is officially recognised in many countries, called Krestin. Krestin is high in PSK or polysaccharide Kureha (after the drug company who developed it) and research began on this in the 1970s. Research began on another constituent extract of *Coriolus* in the 1990s called PSP or polysaccharide-peptide. In Japan in the 1980s PSK or Krestin was one of the highest selling anti-cancer drugs accounting for over a quarter of the total expenditure for anti-cancer agents. The great thing about PSK is that it doesn't seem to have any unwarranted side effects or mutagenic effects, unlike many other chemotherapy agents. Interestingly, PSP and PSK seem to enhance the positive qualities of other drugs and lessen the possible side effects of these powerful agents. In Phase 2 and Phase 3 trials in China PSP significantly increased the 5-year survival rate from oesophageal cancer. Other studies with PSP have demonstrated impressive results with improving quality of life, substantial lessening of pain and enhanced immune activity in 70 to 97% of patients with cancers of the cervix, lung, breast, ovary and stomach.

There are many studies, which reveal the use of PSK as having anti-tumour capabilities. *Coriolus* is the highest source of PSK, which we know about. Through studies *Coriolus* has been found to be of benefit as treatment and preventative for tumours of the breast, colon, liver, nasopharynx, stomach, oesophagus and adenoma of the lung. It is adaptogenic and enhances liver functions, hormonal harmony and immune functions, such as increasing the number, activity and production of Natural Killer Cells, interferon, macrophages and T-cell counts.

A recent British study by Dr Julian Kenyon with 30 patients that had Stage 3 and 4 hard tumours, found that a biomass powder of *Coriolus versicolor* had a significant effect on the immune system, with specific emphasis on four immune parameters tested over a 120-day period. These four immune

parameters were the changes in telomerase, Interleukin 5 and 12 levels, plus the tumour necrosis factor beta, which slightly increased. The study concluded that there was a differentiating effect on cancer cells by lowering telomerase activity in all cases, except four.

Also the average Interleukin 5 decrease and Interleukin 12 increase shows a general shift of the system to what is called a Cytokine TH1 immune response (rather than a TH2 response as this can be pro-inflammatory, leave the system open and susceptible to stress and have reduced anti-tumour activity generally). Dr Kenyon summarised this developing anti-tumour response by saying "This is indeed remarkable, as the majority of cases were stage 3 and 4 cancers, many of them chemotherapy or radiotherapy failures".

Also in Portugal similar studies have discovered that *Coriolus* and other mushrooms can be used as a delivery agent for enzyme therapies in cancer and cardiovascular care. Also, the role of *Coriolus* in the treatment of breast cancer has gained a positive reception.

Autoimmune conditions seem to respond really well to the long-term administration of *Coriolus*, probably due to its anti-inflammatory and anti-viral activity. Plus *Coriolus* supports the Hypothalamic-Pituitary-Adrenal axis (HPA), which we refer to in Iridology as the neuroendocrine "Stress Axis". I have found it of benefit for people with Rheumatoid Arthritis, Hepatitis, Systemic Lupus and there is evidence to suggest its benefit in Sarcoidosis, Bechet's disease, recurrent genital Herpes and idiopathic nephrotic syndrome - although I have not seen any of the last three conditions.

For all parents it is worth noting that *Coriolus* is traditionally used in Mexico internally and externally for the treatment of Ringworm and Impetigo. I have advised the same in the past, when tinctures have been available. It seems to be very effective at clearing these persistent conditions and preventing them from reoccurring.

When we eat or take Turkey Tails it is said in TCM that it enters the spleen and heart meridians invigorating the spirit. It certainly feels that way to me, as I said previously it is an edible plant and one to savour on walks in the woodlands. It's also completely safe and non-toxic and cannot be confused with other, obviously more suspicious or potentially dangerous funghi (if in any doubt about the exact identification of a mushroom don't eat it!). The tincture needs to be made as fresh as possible after washing; it can also be used powdered. Please check with your practitioner for the suggested dosage, because this is dependent on the nature of the condition you have.

Avoid cultivating *Coriolus* from areas where dog walking is prevalent.

Contra-Indications:

No contra-indications or side effects are documented.

Clinker Polypore or Chaga

Clinker Polypore, known as Chaga in parts of Russia, can be a potent medicine utilised in the treatment of various tumours. The Latin name for this funghi is *Inonotus obliqus* and its large black conk (this is a real mycological term!) can have the appearance of having been burnt and its stalkless growth, which can reach a staggering 4 to 5 feet in length, can be located on species of Alder, Elm or Birch trees, for example both Black or Silver Birches. It is an edible mushroom, but it is tough and to harvest it successfully may require the careful use of an axe to prise it from the bark of the host tree.

Liquid extracts of the mushroom are used in herbal and also orthodox medicine, as an easier method of administration and storage.

According to the Russian researchers Belova and Varentsova the tincture of Clinker Polypore should be made at a ratio of 1:10 preserved with 10% ethanol and I have no reason to disagree with them.

Although Clinker Polypore is well known through its use by traditional Russian healers, it is only in the latter half of the 20th century that it has received serious scientific analysis. Clinker Polypore, or Chaga, can also be used intra-venously in cases of certain cancers. In 1955 it was suggested for and approved for public use in the treatment of cancer by the Moscow Medical Academy of Science, in 1960 the American National Cancer Institute received a report that a Chaga decoction had been used successfully to treat cancer in Australia and in Poland in 1957 a study of patients with third and fourth stage malignancies found Chaga injections with cobalt salts to be the most effective preparation, with doctors seeing reductions in tumours of the breast and genitals, less pain, return of appetite, reduction in nausea, less haemorrhaging, improved sleep and general energy.

Clinker Polypore tends to be used for more inoperable cancers, particularly those of the breast, uterus, ovary or lung. With lung cancer an aerosol preparation was used. In the use of cancer Russian doctors suggest using the mushroom for an entire year for the most productive results. Chaga can work for both malignant and benign tumours, such as uterine fibroids or possibly pituitary adenoma.

Clinker Polypore is well known in the Baltic States as a "blood purifier" and has a traditional use in many countries of treating gastric ulcers, cancers of the breast, lung, lips, parotid glands, skin and rectum, plus Hodgkin's disease. In addition to its use in gastritis, liver problems, psoriasis and abdominal pains, it helps to normalise the intestinal functions due to improved bacterial balance, hormonal exchanges and enhanced digestion. The mushroom is rich in triterpenes, steroidal substances, alkaloid-like substances, tannins and vanillic acids. All these can have a beneficial modulating influence on the endocrine, immune and nervous systems.

When harvesting Clinker Polypore it is essential that we identify the plant as "true

chaga" and not the False Chaga. On the underside of the fungus real Chaga has a serrated edge and is rough, whilst the False one has a smooth underside. It is recommended by Russian herbalists that we do not use Clinker Polypore from dead or dying trees and that the fungus is not completely black, as it will be past its prime and medicinal potential. Autumn is probably the best time for harvesting.

Clinker Polypore is made into official drugs in Russia such as "Befungin," and many other products of Chaga are available to take generally. This is not the case around the world, although I am sure that this will change on a global scale, once our awareness of this incredible mushroom begins to increase.

Dosage:

10 mls twice daily.

Also IV administration as directed medically

Contra-indications:

No toxicity or contra-indications have been documented

Topical Mushroom Information

In light of all the information covered here it was heartening to see the following on a BBC News website of all places, someone kindly sent me:

"Scientists and doctors are beginning to realise the magic of mushrooms. The West is now well aware of herbal medicines. The next class of natural medicines will be mushrooms. One prominent surgeon in the UK recently developed gallstones but swore he would not allow his fellow surgeons to operate on him. So he turned solely to eating mushrooms from the supermarket for three months and the gallstones slowly disappeared.

The low fat content of his diet may have contributed to his recovery.

He told BBC News Online: "If I developed gall stones again I would not hesitate to go on a mushroom diet again. But there is no way I could recommend them to my patients or tell my colleagues I did not trust their skill in the operating theatre. There is not yet the evidence on the mechanics behind why I am cured. Science has not got there yet. And as a doctor I could not recommend scientifically unresearched cures to people. That is bad medicine." (Little does he know! – Ed)

Chinese led the way

But mushrooms have received backing from other senior figures in medical research. One such proponent of their powers is Dr John Wilkinson of the herbal medicine department, Middlesex University. He said: "Mushrooms have been used in China for thousands of years for medicinal purposes. The West is now well aware of herbal medicines. The next class of natural medicines will be mushrooms. Normal field mushrooms could possibly have a dissolving effect of gallstones although it is not proven. But it is well documented that a low fat and dairy-free diet can assist in the treatment of gall stones."

"Reishi mushrooms however do have a strong reputation for fighting health problems. Often patients are forced into medication and surgery when there are other safe alternatives. Reishi mushrooms are particularly useful for treating arthritis through anti-inflammatory agents called triterpinoids, which are similar to steroids.

Dr Wilkinson said: "Laboratory studies have also shown that Reishi and Shiitake mushrooms can boost the immune system function as well." Tonics of these mushrooms are often drunk in China for conditions such as arthritis, influenza and the common cold."

Conclusion

From the evidence presented here it is clear that the potential of the medicinal and nutritional uses of mushrooms has been realised to a degree, however, we still have quite a way to go in convincing both natural and medical practitioners of this potential and also, the view of the general public. Although I feel the use of medicinal mushrooms by the populace will exert pressure on the medical system to begin to explore, accept and integrate medicinal mushrooms into oncological care, endocrine balance and autoimmune management, to name just three main areas of application for these wonderful gifts of nature.

What we know today about medicinal mushrooms is just the beginning of this exploration. As time and experience elapse, we will discover so much more from trial and error, plus practical application. There are many other medicinal and nutritional mushrooms, which I have not explored here, mainly due to my lack of direct experience with them, but we can be sure we will be hearing a great deal more about mushrooms like *Grifola frondosa* (Maitake mushroom), *Hericium erinaceus*, *Phellinus linteus* and *Auricularia* in the future.

Auricularia or Wood Ear, is a blood stabilising tonic and is very useful in cases of ferrum chromatosis, anaemia, anxiety and chronic fatigue, due to its high content of calcium, potassium and iron. Maitake mushroom is one of the most studied mushrooms on the planet and there is significant support for its role in the treatment of bladder, prostate and liver cancers, Diabetes, Obesity, high cholesterol and even protecting the system against a bad diet with impoverished nutrition, due to a heavy reliance on processed food.

Hericium, or the hedgehog fungus, is being looked at for its potential in treating Alzheimer's disease, as it can help to stimulate the production of a protein called nerve growth factor (NGF). NGF is essential for the brain to develop and maintain sensory neurons. It could also be used for boosting the immune system and has been used in the treatment of sarcomas.

Phellinus is a "new fungus" to medicine, although it has been used for centuries on the Korean peninsula to treat inflammatory conditions like Arthritis and, also, stomach cancer by being boiled up in water and drunk as a tea on a daily basis. It's amazing

that the western scientific world always eventually gets around to confirming what we have instinctively know about healing plants as a race, for hundreds, if not thousands of years. *Phellinus* is a very potent immune system catalyst, helping to mobilise all aspects of the cell-mediated and humoral responses. *Phellinus*, like Maitake, is very high in beta-glucans. Beta-glucans help to make the immune system more alert and active, especially when under stress or an attack, such as a cancer, virus or a bacterium.

NEVER pick or eat any wild mushroom or fungal looking plant if you are not 100% confident of what it is.

Appendix 6
Salivary Hormonal Tests

Hormonal levels can be reliably assessed using functional salivary tests. This type of test can be utilised if there are anomalies with either blood test results or unanswered questions from the iridology analysis.

Available hormone tests include:

- Melatonin Profile
- Female Hormone Profile
- Male Hormone Profile
- 24 hour Adrenal Stress Profile
- Testoterone
- Cortisol

Appendix 7
Comprehensive Melatonin Profile

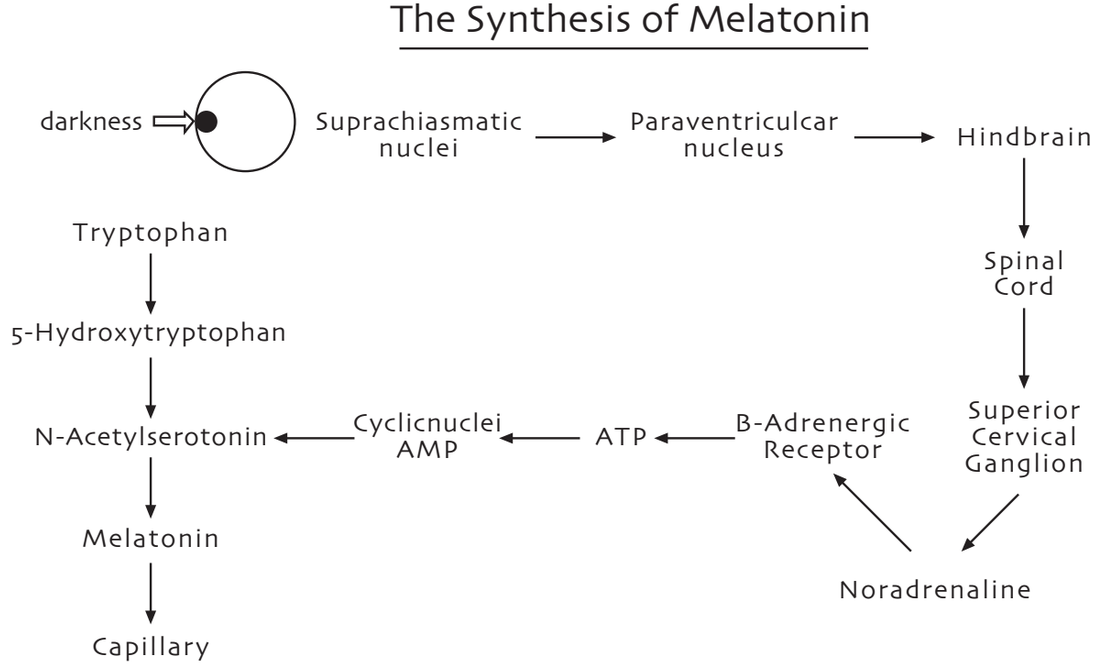
Melatonin Synthesis

Melatonin is the primary substance secreted by the Pineal gland, which modulates the adrenal (HPA) axis during clinical illness, the serotonergic system in psychiatric disease, as well as the body's general response to stress.

Melatonin is synthesised within the Pineal gland from tryptophan via the pathway shown below:

The secretion pattern is generated within the suprachiasmatic nucleus (SCN). Synthesis occurs upon exposure to darkness, with the increased activity of serotonin-N-acetyltransferase. By the action of hydroxyindole-O-methyltransferase (HIOMT), N-acetylserotonin is converted to melatonin. Melatonin is then rapidly secreted into the vascular system and, possibly, into the cerebrospinal fluid.

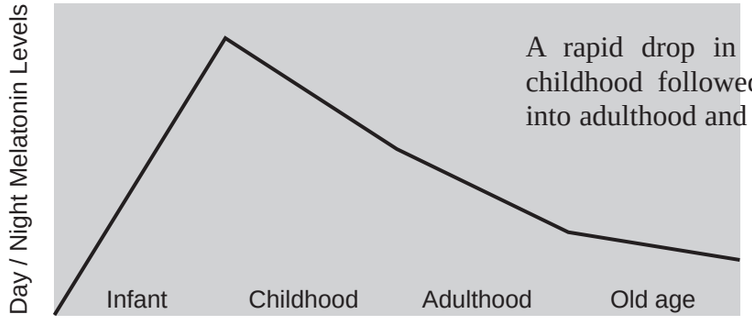
Peripheral tissues, such as the retina and the gut, are also known to synthesise melatonin.



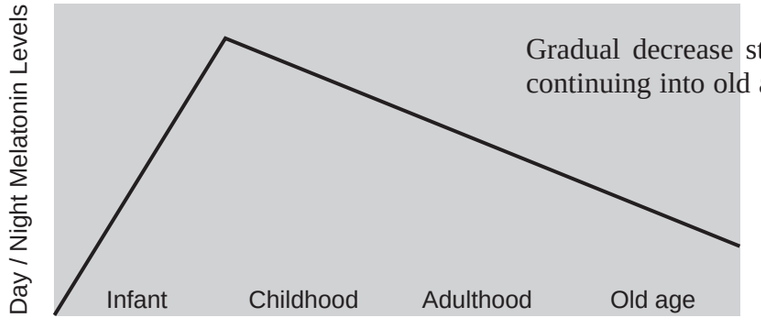
Ageing

Melatonin production in humans begins at the age of approximately 3 months. Peak nocturnal levels occur between the ages of 1-3 years. Secretion levels decline as the individual develops sexual maturity, and drop 80% by the time adulthood is reached, diminishing even further with age.

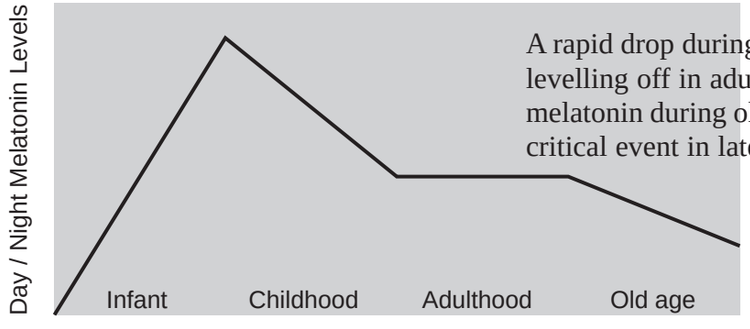
Patterns of How Melatonin Decreases with Age



A rapid drop in melatonin levels during childhood followed by a gradual decrease into adulthood and old age.



Gradual decrease starting in childhood and continuing into old age.



A rapid drop during childhood followed by a levelling off in adulthood. The sharp drop in melatonin during old age may be caused by a critical event in later life.

Light-Dark Cycles

Melatonin is synthesised and secreted during the dark phase of the day. The secretion rhythm is endogenous (internally generated), and generally persists in the absence of time cues, assuming a period that deviates only slightly from 24 hours. Thus, it is a true circadian rhythm.

Melatonin secretion is related to the length of the night. The duration of secretion is increased with a longer night. If humans are kept strictly in darkness for 14 hours per day over a period of 1 month, the duration of melatonin secretion expands to cover almost the entire dark period. Conversely, if a subject is exposed to light for 14 hours per day, the duration of secretion shrinks to 10 hours, accompanied by concomitant changes in body temperature and sleep.

Light Exposure

Light exposure of the retina alters the amount of serotonin metabolised to melatonin, via the neural pathways that connect the retina to the Pineal gland. The individual's system must be intact for proper synchronisation of the melatonin rhythm. Blind persons commonly exhibit a pronounced lack of circadian rhythm, with free-running cycles generated internally despite the presence of other external time cues in their environment.

Exposure to sufficient levels of light at night can rapidly reduce melatonin production. One investigator found that after human subjects were exposed to one hour of light at midnight using 3000, 1000, 500, 350 and 200 lux intensities, melatonin levels dropped by 71, 67, 44, 38 and 16% respectively.

The spectrum of light that most dramatically inhibits melatonin secretion is green band light (540nm), which corresponds to the rhodopsin absorption spectrum in humans. This observation is of considerable importance, not only to understand the physiological effects of melatonin, but also to effectively regulate circadian rhythms - a crucial component in the treatment of Seasonal Affective Disorder (SAD) and other health problems.

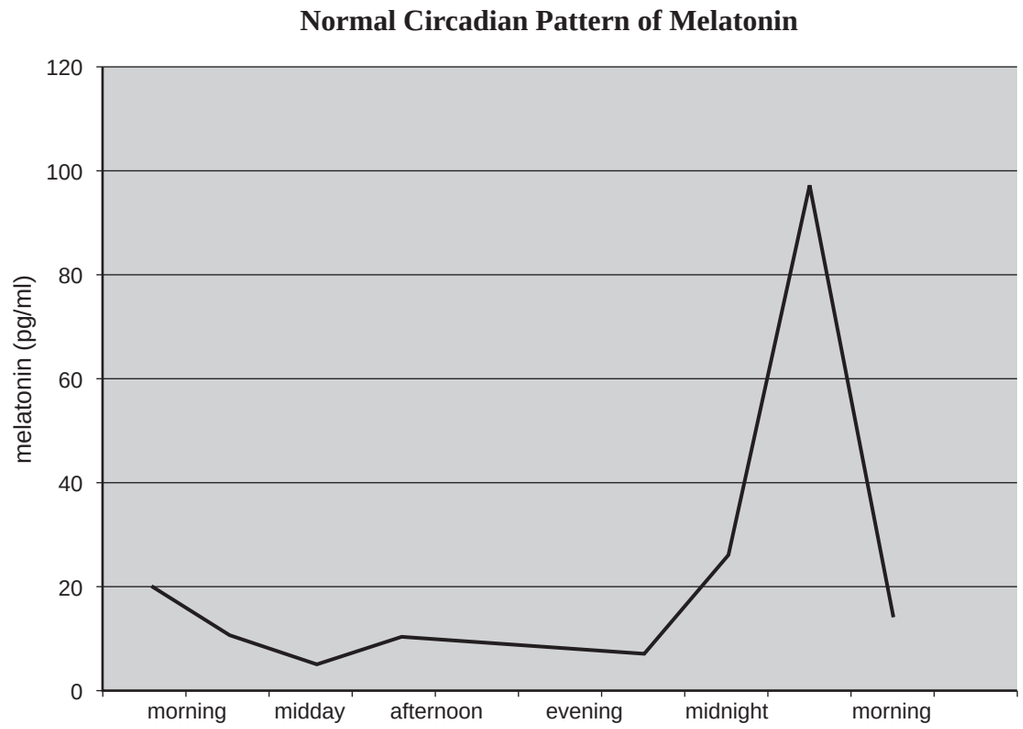
Melatonin Rhythm Assessment

Melatonin secretion levels are low during the day and high at night, peaking at about 2-3am for most healthy individuals. This circadian rhythm makes melatonin one of the best markers for circadian rhythm disruption available at this time.

Scientific literature demonstrates excellent circadian plotting obtained by saliva analysis. Since salivary and serum melatonin levels correlate well, Great Smokies Salivary Melatonin Profile offers the patient a safe, economical, and non-invasive way of assessing Pineal function and melatonin secretion patterns. Results can be useful in treating any of the wide variety of disorders associated with abnormal melatonin levels.

The profile plots melatonin activity based on 3 saliva samples taken at morning, evening and midnight. The figure below

shows the normal circadian melatonin pattern for one patient over a 24-hour period.



Appendix 8
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