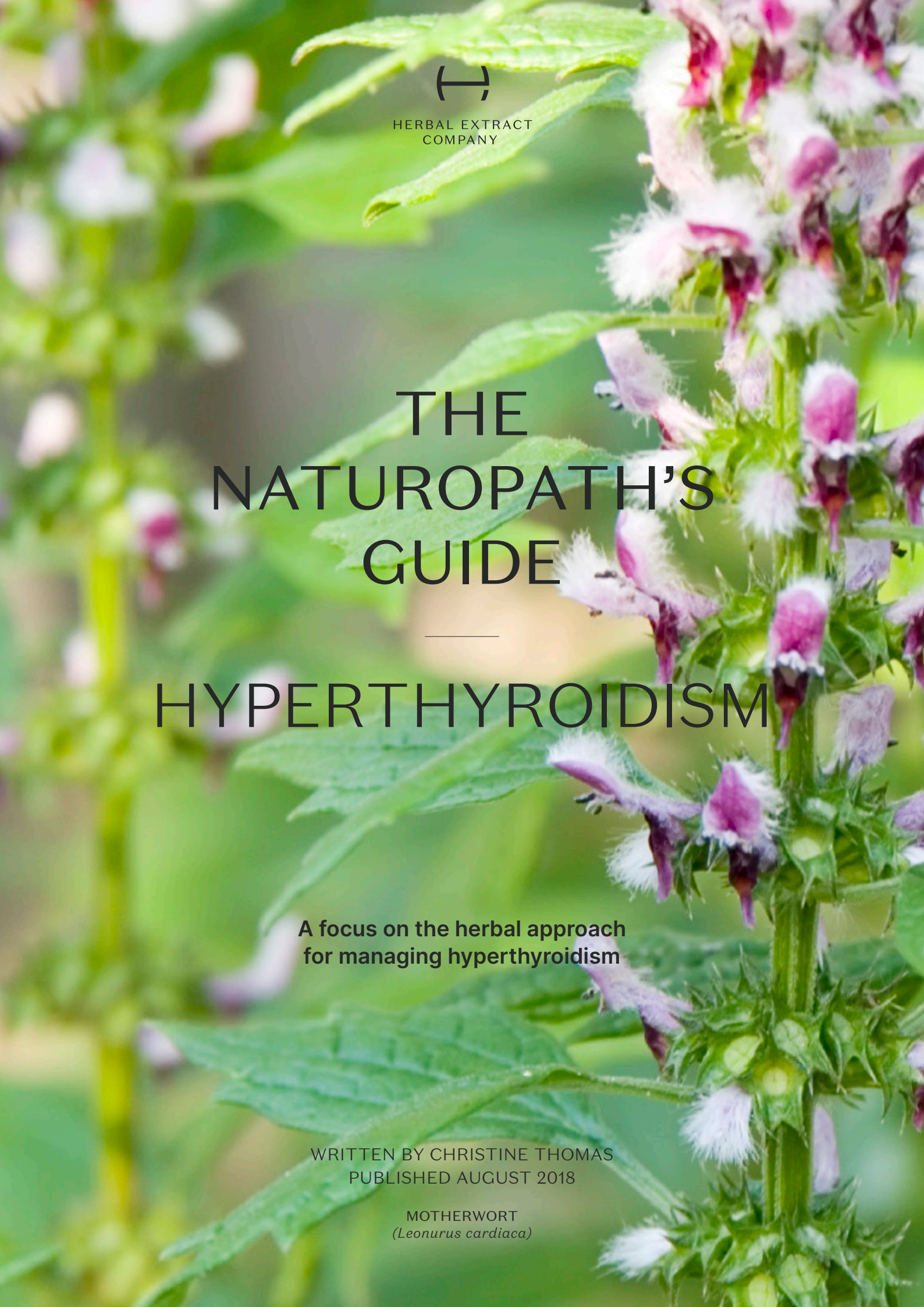

HERBAL EXTRACT COMPANY

THE NATUROPATH'S GUIDE

HYPERTHYROIDISM

A focus on the herbal approach for managing hyperthyroidism

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MOTHERWORT
(Leonurus cardiaca)

HYPERTHYROIDISM

Overactive thyroid accelerates the body's metabolism and can lead to serious complications if left untreated.

It is not a simple isolated thyroid condition but can encompass autoimmunity and interrelation with many other hormones, glands and other organ dysfunctions. The thyroid gland is a butterfly shaped gland located in the front of the neck. The thyroid gland itself is regulated by the pituitary gland in the brain, and the pituitary gland is regulated by the hypothalamus, another gland in the brain. The thyroid gland is the most common organ affected by autoimmune disease.

Condition Overview

Hyperthyroidism is a set of disorders that involve excess synthesis and secretion of thyroid hormones by the thyroid gland and it can be overt or subclinical. Overt hyperthyroidism is characterised by low serum thyroid-stimulating hormone (TSH) concentrations and raised serum concentrations of thyroid hormones: thyroxine (T4), triiodothyronine (T3), or both. Subclinical hyperthyroidism is characterised by low serum TSH but normal serum T4 and T3 concentrations. In areas of iodine deficiency the main cause of hyperthyroidism is toxic nodular goitre which affects predominantly the older population. In iodine sufficient areas Graves' disease (diffuse toxic goitre) is the most common cause of hyperthyroidism in clinical practice.

In spite of advancements in understanding the pathogenic mechanisms of Graves' disease its ultimate cause remains elusive and it is thought to be multifactorial arising from the loss of immunotolerance and the development of autoantibodies that stimulate thyroid follicular cells by binding to the TSH receptor. This autoimmune basis results from complex interactions between genetic and environmental factors and causes excess and heat signs throughout the body. Rarer causes of hyperthyroidism include an autonomously functioning thyroid adenoma or thyroiditis.

Hyperthyroid disease is less common than hypothyroid disease but it is generally more dangerous because it puts tremendous stress on the body, particularly the heart, and should not be left untreated. Both Graves' disease and Hashimoto's disease (underactive thyroid gland) have a lot of similarities. They are not thyroid conditions but instead are autoimmune conditions which affect the thyroid gland. The main difference is that they involve different autoantibodies. While Hashimoto's involves thyroglobulin antibodies and/or thyroidperoxidase antibodies which lead to the destruction of the thyroid gland, Graves' disease is characterized by TSH receptor antibodies, which stimulate the TSH receptors, thus resulting in an excess of thyroid hormone.

Common Symptoms

Excess thyroid hormone affects many different organ systems. Below are some of the more commonly reported symptoms.

- palpitations.
- fatigue and muscle weakness.
- tremour seen easily with the hands held out straight.
- anxiety.
- disturbed sleep.
- weight loss.
- heat intolerance and increased body temperature.
- sweating and hot flushes.
- excessive thirst and hunger.
- diarrhoea.
- thyrotoxicosis (excess thyroid hormone).
- goitre (abnormal enlargement of the thyroid gland).
- ophthalmopathy (prominent eyes).
- pretibial myxoedema (itching skin lesions).
- menstrual disturbances in women.

Elderly patients present with fewer and less pronounced symptoms than younger patients but are at increased risk of cardiac complications.

Risk Factors

Gender

Hyperthyroidism occurs in two percent of the general population and occurs 10 to 20 times more in women than men. Given the higher prevalence of Graves' disease in women sex hormones and chromosomal factors, such as the skewed inactivation of the X chromosome, are suspected to be triggers.

Genetic Factors

Appear to influence the incidence of thyrotoxicosis and Graves' disease often occurs in multiple members of a family. Several genetic syndromes have been associated with hyperthyroidism especially autoimmune thyroid disease e.g. McCune-Albright syndrome is caused by mutations in the GNAS gene. The genes involved in Graves' disease are thought to be immune regulatory genes (HLA region, CD40, CTLA4, PTPN22 and FCRL3) and thyroid autoantigens such as the thyroglobulin and TSH-receptor genes.

Stress

Negative life events may be risk factors for Graves' disease.

Smoking

A dose dependent risk factor for Graves' hyperthyroidism and especially for Graves' ophthalmopathy.

Environmental Toxicity

There is increasing evidence that environmental exposures, specifically to pesticides, should also be considered potential risk factors for thyroid disease.

Iodine Status

Although it is essential for normal thyroid function evidence exists that iodine can act as an immune stimulator, precipitating autoimmune thyroid disease and acting as a substrate for additional thyroid hormone synthesis.

Infection

There is evidence suggesting the involvement of infection. Data regarding the role of *Borrelia burgdorferi* and *Yersinia enterocolitica* as triggers of thyroid autoimmunity remain inconclusive. Some reports have suggested molecular mimicry with the TSH receptor that may explain an association between both of these pathogens and autoimmune thyroid disorders. Other microorganisms implicated include *Helicobacter pylori*, Coxsackie virus and Hepatitis C virus.

Prescription Medication

Immunomodulating drugs are suspected as a risk factor.

Digestive Function

Patients with Grave's disease are at a fivefold added risk of developing coeliac disease. Thyrotoxicosis has been reported in 3.8 per cent of patients with ulcerative colitis.

How To Get The Correct Diagnosis

Diagnosis can be difficult because symptoms can mimic many other disease states. Serum TSH is measured first. It is now recognised that TSH measurement is a more sensitive test than free T4 for detecting both hypo- and hyperthyroidism. As a result some countries (Australia included) now promote a TSH first strategy for diagnosing thyroid function (provided the TSH method has a functional sensitivity <0.02mIU/L). As such clinicians are advised to select laboratories for investigations carefully and consistently with the same reference values. Specialists make a general recommendation that patients with TSH readings lower than 0.75mIU/L (potential Grave's disease) be referred for antibody screening.

If TSH is low then serum free T4 or free T4 index, and free or total T3 concentrations can be measured to distinguish between subclinical hyperthyroidism (with normal circulating hormones) and overt hyperthyroidism (with increased thyroid hormones). In some countries a thyroid radioactive iodine uptake test is recommended for hyperthyroidism unless the diagnosis of Graves' disease is established clinically. The use of thyroid ultrasound and assessment of TSH receptor antibodies (TRAb; i.e., thyroid-stimulating immunoglobulins, or thyroid-stimulating antibodies) are preferred in other countries. Advantages of ultrasound are absence of exposure to ionising radiation, and higher accuracy in the detection of thyroid nodules and lower cost than with radioactive iodine uptake. The differences in approach between endocrinologists might be a result of the different epidemiology of hyperthyroidism because nodular goitre is the predominant cause of hyperthyroidism in some areas.

Conventional Treatment & Prevention

Treatment of hyperthyroidism includes symptom relief as well as therapy with antithyroid medications that suppress the production of thyroid hormones (and can result in hypothyroidism), radioactive iodine to destroy part or all of the thyroid gland or surgery (thyroidectomy) to remove some or the entire thyroid. The latter two are likely to require thyroid hormone replacement for life. Various factors influence the choice of treatment which include patient and physician preference, availability of surgical expertise, concerns with radiation or the difficulties in complying with radiation protection guidance, concerns with side effects of medications, predictors of relapsing disease and cost. Radioactive iodine is the most cost effective treatment when considering the cost of surgery and the high relapse rates however in some countries most patients would prefer to have at least one course of antithyroid medications before considering radioactive iodine. Most patients choose antithyroid drugs and the initial high dose of the drugs can be tapered down after four to eight weeks in what is referred to as the titration regimen, and this is done for 12 to 18 months. Doctors usually attempt to be more persuasive about radioactive iodine at the point of a second relapse. If thyroid hormone goes up too high it can cause a 'thyroid storm', also known as a thyrotoxic crisis. This is a rare and potentially fatal medical emergency.

" Natural therapeutic considerations involved in the management of hyperthyroidism involve treating the person, not the disease, reducing the symptoms and limiting medications associated with the condition."

INTERVENTION	Cardiotonic	Anti-inflammatory	Antioxidant	Adaptogen, nervine, axiolytic, sedative	Antiviral, antibacterial	Digestive and liver herbs	Immune enhancing
Arjuna	✓	✓	✓		✓		
Blue Flag	✓	✓	✓		✓		
Hawthorn	✓	✓	✓	✓	✓		
Lemon Balm		✓				✓	✓
Motherwort	✓			✓		✓	
Poke Root		✓					✓
Rehmannia	✓	✓					✓
Scullcap				✓			
St John's Wort		✓		✓			
St Mary's Thistle		✓	✓			✓	
Valerian				✓			
Vervain				✓		✓	

Natural Therapies For Treatment & Prevention

Due to Graves' disease being the most common cause of hyperthyroidism seen in clinical practice in Australia this guide will focus on treatment for the autoimmune aspect of hyperthyroidism. In its extreme hyperthyroidism and Grave's Disease left untreated can be life threatening therefore it is vital that the patient feels they can work with both their doctor and naturopath side by side. Natural therapeutic considerations involved in the management of Graves' disease involve treating the person, not the disease, reducing the symptoms and limiting medications associated with the condition. If the thyroid has been removed natural remedies may support the patient but herbs can never be a substitute for thyroid medications. Careful monitoring of thyroid levels will help ensure that the drug dose remains appropriate and adjusted as needed. After herbal supplements are added to a program patients can then go back to their prescribing medical doctor and have their dose lowered if appropriate. Since Graves' disease can be triggered by the immune system the goal of natural therapy is to regulate the immune system and coax it back into balance so it no longer attacks the thyroid. Optimal functioning of the thyroid gland is dependent on proper functioning of the hypothalamus and the pituitary gland, adequate supply of iodine, and proper conversion of thyroxine (T4) to triiodothyronine (T3). Enhancing thyroid function and increasing quality of life are paramount. This can be achieved by addressing the adrenal glands, immune system, gastrointestinal tract and detoxification pathways. There is no 'Graves' disease protocol' for everyone. The trigger for one person in autoimmune disease may be related to gastrointestinal issues while in another person it may have more to do with exposure to heavy metals. So the same disease in two different people may require two different treatment plans. An individualised and thorough treatment plan works best for these conditions. There are numerous factors that can deregulate the immune system.

St John's Wort
(Hypericum perforatum)

Possible root causes include:

Stress and Adrenal Health

Stress is a potential autoimmune trigger because it can suppress immunity which can make people more susceptible to an infection. It can also dysregulate immune system function by increasing proinflammatory cytokines. Furthermore it can decrease secretory IgA which lines the mucosal surfaces of the gastrointestinal tract and this also can increase susceptibility to an infection which in turn can lead to autoimmunity.

Inflammation

An increased metabolic rate brings with it increases in inflammation and oxidative stress particularly if autoimmunity is also present.

Nutrient Deficiencies

The excess production of thyroid hormones that occurs in hyperthyroidism leads to a higher metabolic rate and subsequently nutrients are depleted faster than normal. Additionally problems with digestion (e.g. leaky gut and SIBO) are also common requiring a greater need for nutrients. The higher metabolic rate also affects bone growth, mineralisation and remodelling, which are determined by TSH and T3. Consuming a nutrient dense diet high in protein and kilojoules is recommended. It is ideal to consume this in small frequent meals throughout the day.

Food Allergies

Consider an elimination diet.

Smoking

Can have an inhibitory effect on thyroid function by interfering with iodine uptake and thyroid hormone production.

Environmental Toxin Exposure

Such as heavy metal exposure.

Excessive Iodine Intake

Patients are advised to avoid the intake of iodine rich foods such as kelp, seaweed, iodised salt, sea salt and agar agar. Other foods that contain a moderate amount of iodine include milk or dairy products, eggs and seafood. Patients can increase their intake of goitrogenic foods such as Brassicaceae (or Cruciferae) family foods like broccoli, cabbage, cauliflower, Brussels sprouts, kale, radishes and spinach. These are foods which prevent the utilisation of iodine by the thyroid. They need to be consumed raw as they are inactivated by cooking. Soy milk that does not contain iodine or kombu, tofu or tempeh are also good options.

Excessive Ingestion of Thyroid Hormone

Due to over medication or alteration in metabolism of thyroid hormones.

Potential Treatment Plans

Hyperthyroidism with Graves' disease	Arjuna	Lemon Balm	Motherwort	Scullcap	Valerian
Decrease inflammation and modify the immune system	Rehmannia	Hemidesmus	Echinacea	Blue Flag	Bupleurum
Hyperthyroidism associated with viral infection	St John's Wort	Poke Root	St Mary's Thistle	Andrographis	Rhodiola
Thyrotoxicosis (excess thyroid hormone in the body)	Astragalus	Hawthorn	Motherwort	Rehmannia	Vervain

Desired Herbal Actions and Potential Herbs Include:

Adaptogen, Nervine, Anxiolytic, Adrenal Restorative

Stress control is essential to assist in normalising the function of the thyroid. Herbs include gotu kola, Jamaica dogwood, oats green, passionflower, rehmannia, reishi, rhodiola, scullcap, valerian, vervain.

Anti-inflammatory

To control inflammation which may be dysregulating the immune system. Herbs include blue flag, bupleurum, chamomile, rehmannia, turmeric, wild yam.

Antioxidant

To reduce tissue damage from free radicals released at the site of inflammation. Herbs include ginkgo (a human trial found it may protect from possible oxidative and genotoxic damage associated with radioactive iodine treatment), hawthorn, St. Mary's thistle, turmeric.

Antiviral

Treat any suspected viral aetiology such as a recent bout of influenza. Herbs include St John's wort and thuja.

Autoimmune Support

Herbs include andrographis, astragalus, calendula, rehmannia, reishi, hemidesmus (some practitioners suggest this works well with low dose echinacea in autoimmune disorders).

Cardiovascular Tonic

Cardiac symptoms such as tachycardia and palpitations can be controlled with antiarrhythmic herbs. Herbs include arjuna, hawthorn, motherwort and lime flowers.

Digestive Health

To balance bowel flora, soothe and heal the gut lining and restore integrity to the gut wall. Herbs include marshmallow, slippery elm, ribwort and ginger.

Hepatic Herbs

To protect the liver and increase liver clearance of chemicals. Adequate liver detoxification and protection is a vital part of the treatment of autoimmune diseases. Herbs include dandelion, burdock, schizandra, St. Mary's thistle and turmeric.

Thyroid Regulator

Herbs include lemon balm, motherwort and rosemary.

Poke Root
(Phytolacca americana)

Herbal Support Could Include:

HERB NAME	DESCRIPTION	ACTIONS
Arjuna *(Terminalia arjuna)* 	Hyperthyroidism is characterised by widespread cardiovascular dysfunction. Arjuna is a well-known heart tonic which is used extensively in cardiac debility. It's cardioprotective role is possibly mediated through alterations in thyroid hormones.	Cardioprotective Heart Tonic Hypotensive Hypolipidaemic Inotropic (changes the force of the hearts contractions) Antioxidant Anti-inflammatory Cytoprotective Apoptosis Inducing Antibacterial Antiviral Astringent Febrifuge Demulcent
Lemon Balm *(Melissa officinalis)* 	Traditionally used to treat symptoms associated with hyperthyroidism such as tachycardia, insomnia and hyperactivity. Preclinical studies have shown that lemon balm is effective in blocking the binding of TSH to the receptor by acting on the hormone and the receptor itself. It has been shown to be effective in reducing stress in a double-blind, placebo-controlled, randomised trial. There are many similarities between lemon balm and bugleweed *(Lycopus virginicus)* which have both been historically used to calm the heart and inhibit binding of TSH to thyroid follicles, block peripheral T4 deiodination and block stimulating autoantibodies of Graves' disease. Researchers suggest it will only inhibit an overactive thyroid and not one that is functioning normally.	Anxiolytic Sedative Antiviral Antibacterial Anti-inflammatory Antioxidant Cardiovascular Tonic

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Blue Flag *(Iris versicolor)* 	Traditionally used to treat goitre its anti-inflammatory action helps reduce thyroid enlargement. It is known as a detoxifier of the thyroid gland which is especially useful when thyroid chemistry is disrupted by environmental toxins.	Alterative Anti-inflammatory Astringent Lymphatic Hepatic
Hawthorn *(Crataegus monogyna)* 	In hyperthyroidism hawthorn improves cardiac function and normalises blood pressure.	Cardioprotective Inotropic Antiarrhythmic Hypotensive Antioxidant Antimicrobial Anti-inflammatory
Motherwort *(Leonurus cardiaca)* 	Has long been used to treat heart palpitations and the anxiety that accompanies them. Nervous cardiac disorders such as heart palpitations are commonly experienced by those with Graves' disease.	Antiarrhythmic Relaxing Nervine Hypotensive Cardiovascular Tonic Digestive Bitter Diaphoretic
Poke Root *(Phytolacca americana)* 	Increases circulation and improves lymphatic flow through the thyroid.	Anti-inflammatory Lymphatic Alterative Immune Enhancing

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Rehmannia *(Rehmannia glutinosa)* 	Especially useful for treating hormonal disorders such as thyroid imbalance and adrenal insufficiency.	Adrenal Trophorestorative Immune Modulator Anti-inflammatory Antipyretic Possibly Cardioprotective
Scullcap *(Scutellaria lateriflora)* 	A calming, nervous system tonic.	Nervine Tonic Mild Sedative Anxiolytic
St John's Wort *(Hypericum perforatum)* 	Indicated where Graves' disease is suspected to be caused by a viral infection. St John's wort is also a commonly used treatment for depression, anxiety, nervousness and restlessness. Therefore this herb may be warranted for the treatment of Graves' disease due to its effects on the immune and nervous system. Graves' disease typically presents with nervousness, insomnia and irritability.	Antidepressant Anxiolytic Anti-inflammatory Antibacterial Antiretroviral
St Mary's Thistle *(Silybum marianum)* 	Extensively used for liver disorders it helps counteract oxidative damage and liver dysfunction in hyperthyroidism.	Antioxidant Anti-inflammatory Gastroprotective Antiviral Hepatoprotective Choleretic Hepatorestorative Cholagogue

Herbal Support Could Include: (Cont.)

HERB NAME	DESCRIPTION	ACTIONS
Valerian *(Valeriana officinalis)* 	Hyperthyroidism negatively affects the nervous system with symptoms such as anxiety and insomnia. Valerian is used traditionally as an effective sleep aid especially useful when muscle tension is leading to or caused by anxiety and/or an inability to sleep.	Mild Sedative Anxiolytic Relaxant
Vervain *(Verbena officinalis)* 	Can be used to ease depression especially when this follows illness such as influenza.	Nervous System Tonic Sedative Bitter Mild Choleretic Hepatic Stimulant

Conclusion

Conventional medicine can be effective for hyperthyroid disease but it does not address the underlying root cause. There are many people who can benefit from a natural treatment approach and they will not only feel better from a symptomatic perspective but this treatment can prevent other future problems from developing. Naturopaths can address the imbalance with diet, lifestyle and herbal therapies which can significantly improve the overall vitality of the person. These therapies may take time and require vigilance, with effects building over several months. However, with careful guidance and observation, these options can be used alongside conventional care safely.

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