

Hypothyroidism: Facing the Complexity.

Dissertation for the 1 Year Intensive Course in Naturopathic Nutrition for the School of Modern Naturopathy International.

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1. Introduction.

The thyroid gland, sitting within a person's neck structure, is essential for regulating metabolic rate, thermogenesis, controlling the rate of protein production and regulating the body's sensitivity to some hormones. Every cell within the human body has receptors for particular thyroid hormones⁽⁵⁾, so the thyroid gland potentially affects metabolism in every cell in the body.⁽ⁱ⁾

The hypothalamus, a brain structure, emits thyrotropin releasing hormone (TRH) which stimulates the pituitary gland to secrete thyroid stimulating hormone (TSH), which in turn stimulates the thyroid gland to release its hormones. The primary hormone produced by the thyroid is *thyroxine*, also known as T4. There is also a limited amount of tri-iodothyronine (T3) directly produced. The number suffixing 'T' in each case represents the number of *iodine* atoms present in the hormone molecule, so with T4 there are four iodine atoms, with T3, there are three.⁽³⁾⁽ⁱ⁾

As with most hormone-releasing (endocrine) systems, there is an inhibitory feedback loop which, in this case, protects against over production of thyroid hormones.⁽ⁱⁱⁱ⁾

Thyroid hormones 'pool' within cells by binding to intracellular proteins but, before genetic effects occur, virtually all T4 is deionized, thus converting T4 to T3. T3 is the more effective form, having potency around four times greater than T4.⁽⁵⁾ Deionization of T4 is mediated by enzymes that depend upon *selenium*. Zinc may also be involved in the conversion process.⁽ⁱ⁾

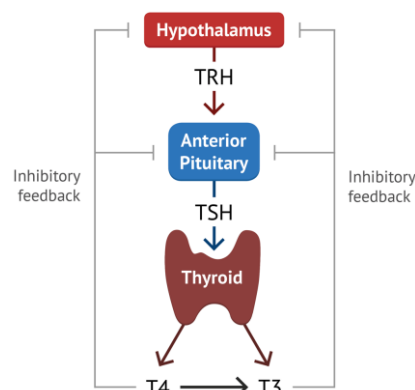


Figure 1. Stimulation of the thyroid gland from the hypothalamus and pituitary gland. ⁽ⁱⁱ⁾

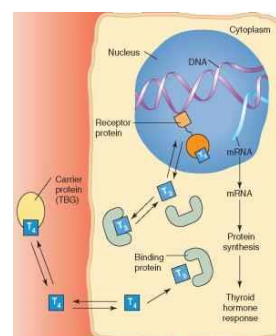


Figure 2. Intracellular thyroid hormone activity. ^(iv)

Such complex and interdependent processes can become interrupted or corrupted by various means, resulting in thyroid related disorders. One of these is *hypothyroidism*, a condition whose hallmark is an underactive thyroid. There are various reports related to global prevalence of hypothyroidism, for example one estimate suggests around 5% of the general population will be diagnosed with the

condition, with a further estimate of 5% remaining undetected. The majority of those affected are women.^(v)

There are challenges around symptoms, diagnosis, attributing cause and also treatment protocols. Some of these challenges will be discussed, so that a clearer understanding of aspects of this condition may emerge.

2. Symptoms:

Some challenges:

Information in research papers, literary reviews and websites give a confusing picture, with little agreement towards a definitive, agreed list of symptoms. Perhaps there are understandable reasons:

While several typical symptoms are often observed in hypothyroidism, there is also an array of less typical effects and associated conditions that may arise from an abnormally low functioning thyroid. This may be due to the vast number of bodily functions dependent on a normally functioning thyroid.

The range of suggested symptoms by some sources can include some that are contradictory, for example either a heightened or a diminished appetite, and either high or low blood pressure.^(vi)

There appears to be huge variance in the range, severity and combination of symptoms from person-to-person. Symptom severity can also be affected by age and longevity of the condition.

Sometimes mild symptoms may be overlooked or alleviated by medication before hypothyroidism has been diagnosed, or even suspected.^(vii)

It can take a long time for some symptoms to become noticeable.^(xxix)

The number of reported effects of hypothyroidism, whether 'official', anecdotal or from experiences by individuals, is staggeringly high, with one internet source reporting as many as 300 symptoms.^(xxiii)

A possible step forward:

Some information can provide a possible clue-trail if we consider the most commonly stated symptoms across publications and other reliable sources, these include:

Tiredness/ fatigue (particularly chronic)

Sluggishness/ weakness

Unusual sensitivity to cold

Constipation

Weight issues that may be otherwise difficult to explain (over or underweight)

Hair loss, particularly from around the eyebrows
 Dry skin
 Depression

In the presence of some or all of these symptoms and the absence of any other medical diagnosis, a practitioner of naturopathy could suspect hypothyroidism. The client may then be encouraged to visit a medical doctor to request a test for hypothyroidism. After diagnosis is made, it should be easier to establish a beneficial protocol for that client.

3. Causes and associated factors.

Hypothyroidism can be categorized in several ways, including:

Primary – associated with thyroid hormone deficiency.
 Secondary – associated with TSH deficiency.
 Tertiary – associated with TRH deficiency.
 Peripheral – by causes periphery to the thyroid.
 Central – combined secondary and tertiary.

In addition to this list of categories, there are several factors that may contribute to each. For example, thyroid hormone deficiency is linked to endemic goitre or chronic autoimmune thyroiditis (also known as Hashimoto's Disease).

There are many possible factors involved in the possible onset of hypothyroidism, including geographical, environmental and genetic, some examples are given below.

Iodine deficiency. Iodine is a micronutrient with a vital role in the production of thyroid hormones, so deficiency prevents normal thyroid functioning resulting in conditions like hypothyroidism.⁽⁵⁾

The recommended dietary allowance (RDA) of iodine for adults is 150 micrograms (μg) per day, rising to 220 μg for pregnant women and 290 μg for breastfeeding women^(viii). A typical serving of commonly consumed food provides somewhere between 3 to 80 μg of iodine^(ix)

Iodine is insufficiently availability in the food chain in many areas of the world, leaving many people deficient (see Table 1).

Various environmental factors, for example disrupted rainwater cycling, leave soil depleted of iodine and result in crops and other food stock being iodine poor.

Iodization of household salt, where practiced, is insufficient to compensate for environmental deficiencies, because around 90% of salt consumption in industrialized countries is from processed foods where iodized salt is not deployed.^(ix)

Percentage of population with insufficient iodine intake	
Country	Percentage deficient
Africa	43.0
Asia	35.6
Europe	52.7
Latin America and the Caribbean	10.0
North America	9.5
Oceania	64.5
Total	35.2

Table 1. Percentage of population estimated as iodine deficient in different areas of the world. Adapted from WHO data.^(x)

Iodine excess. Long-term excess intake of iodine, that is above 1,100 µg per day, can give rise to hypothyroidism or iodine induced goitre (IIG).^(xi)

Inflammation. Cytokines are proteins that regulate the body's responses to infections and disease.^(xii) Particularly aggressive cytokine presence correlates with virulent inflammation and significantly increases risk of autoimmune conditions, including autoimmune thyroiditis.⁽⁶⁾

Thiocyanate. This is a substance rich in sulfates and can be found in some staple foods, such as cruciferous vegetables, raw peanuts and soya protein. Thiocyanate competes with iodine to hamper normal thyroid use of iodide for thyroid hormone production. This increases risk of goitre and so earns the title 'goitrogenic'. Where iodine deficiency is present, goitrogens like cruciferous vegetables, for example broccoli, can exacerbate risk of goitre and hypothyroidism.^{(5)(xiii)}

Fluoride. Iodine can become inactivate by exposure to fluoride⁽⁵⁾ and therefore fluoride has toxic effects on the thyroid, specifically in cases of iodine deficiency.^(xiv)

Vitamin A deficiency. Vitamin A has an important role in regulating thyroid hormone metabolism, it can also be inhibitory to TSH secretion. While more research may be needed to investigate these claims further,^(xv) vitamin A is often found to be deficient in hypothyroidism patients.⁽⁵⁾

Other nutritional factors. Research has shown a wide range of deficiencies implicated in autoimmune thyroiditis, including vitamins A, C, D and B; micronutrients selenium, potassium, iodine, copper, magnesium, zinc and iron. There are also links observed with intake of protein, dietary fibre and unsaturated fatty acids.^(xvi)

Food intolerances. Impaired functioning of the thyroid has been associated with food intolerance, such as with wheat or dairy foods.⁽⁵⁾

Medically induced. A plethora of healthcare related factors have been cited as possibly provoking hypothyroidism, particularly autoimmune thyroiditis. These include both thyroid and non-thyroid related protocols ranging from radioactive iodine treatment to drug therapies like lithium or interleukin.

Genetic factors. There have been reports of quite a small genetic risk, specifically with autoimmune thyroiditis (Hashimoto's disease) being more commonly observed in people who have family members with the condition.^(xvii)

Mercury. It has been suggested mercury can trigger several conditions, including autoimmune thyroiditis, due to its toxic effects on cells. Mercury was found in thyroid glands, post-mortem, and revealed increasing amounts with increasing age.^(xviii)

Flame retardants. Links have been made suggesting increased risk from exposure to polybrominated diphenyl ethers (PBDEs) which are commonly used as flame retardant treatments for a variety of products, including textiles and furniture.⁽ⁱ⁾

Stress/ Cortisol. Cortisol levels raise in times of stress and if a person is having life issues where stress is significant, regular and sustained, an imbalance will be likely. When cortisol levels are too high, insufficient thyroid hormones will be produced, when cortisol is too low, the thyroid gland will be inefficient in maintaining metabolism within the body.⁽⁵⁾

This confounding array of possibilities and permutations can be daunting when it comes to diagnosis, understanding how the condition might have arisen and how to treat it.

4. Medical Diagnosis.

It has been seen there are many factors capable of disturbing healthy thyroid functioning. This may be what makes diagnosis difficult. The standard medical test when a thyroid disorder is suspected is measurement of thyroid stimulating hormone (TSH). If TSH is found to be too high, an underactive thyroid is suspected.⁽⁹⁾ Reasoning for this is the pituitary gland has detected low presence of thyroid hormones in the bloodstream and is attempting to stimulate the thyroid into producing more, by releasing more TSH. There are problems with this approach that may impact on treatment efficacy and sometimes leave the affected person in an unhealthy state. Discussion of treatments will be made in section 5 later.

Some difficulties in using TSH measurement to diagnose thyroid disorder.

TSH Reference Range.

There is ongoing debate about the range of thyroid stimulating hormone (TSH) that is accepted as indicating healthy thyroid gland functioning. While there is a generally accepted range accepted by most physicians, some experts argue the range is too broad. There is a confusing variation of numbers from different sources, for example: The medically accepted range is between around 0.45 to 4.5 microunits per liter (mIU/L).⁽⁹⁾, but some experts suggest it should be in line with most younger adults who have normal thyroid function, which is between 0.4 to 2.5 mIU/L^(xix)

Individual differences.

Variations of measured TSH will exist between people and across time. Some examples^(xix) are:

Age of the person.
 Time of day of testing.
 Pregnancy.
 Illness.
 After certain meals, e.g. high iodine intake.
 Some medications.

Causes of hypothyroidism.

It has been seen that impaired functioning of the thyroid gland can arise from many different factors. Testing for TSH levels is not a reliable indicator of what may be causing atypical thyroid function. There may be, for example, dysfunction in the pituitary gland affecting TSH release, or disruptions around the hypothalamic-pituitary axis that is crucial for normal thyroid function.^(xix)

False negatives.

It is possible that measurement shows normal TSH levels even when a person has hypothyroidism.

There may be effects on TSH levels if cortisol levels are high or low, although research investigating this seems sparse.

Laboratory or human errors could also give inaccurate results.

5. Circumstances.

Long established medical protocols favour thyroid replacement therapy, most often in the form of Levothyroxine (LT₄). This treatment tends to be used exclusively for what is described as 'hypothyroidism'.^(xx)

It has been shown there are many possible factors contributing to hypothyroidism and therefore the question can arise about whether standardization is appropriate when it comes to treatment. Indeed, some difficulties with such an approach have been reported.

With such complexity, the prospect of treating a person displaying hypothyroid symptoms may be daunting. An excellent strategy for the naturopathic practitioner, however, is to consider which of three scenarios fits with such a client. Suggested procedures will vary according to each, discussed below:

(i) *Has there been medical diagnosis involving underactive thyroid but the client is showing little or no improvement after taking thyroxine medication?*

It remains typical for mainstream medical practitioners to measure levels of TSH for suspected hypothyroidism and prescribe thyroxine in cases of high levels. The rationale is simply that high TSH will be present due to low thyroid hormone levels, as the pituitary is releasing more TSH to compensate. However, there are situations where TSH is high but thyroxine has limited or no effect. Some of these are discussed below:

(a) The client has autoimmune thyroiditis (sometimes known as Hashimoto's Disease).

Autoimmune thyroiditis is a common cause of an underactive thyroid and arises when anti-thyroid antibodies are damaging the thyroid gland. Antibodies are proteins that protect against infections, but they can mistakenly attack the body's normal tissues. Anti-thyroid antibodies cause inflammation. Medical practitioners do not typically test for anti-thyroid antibodies and so the inflammation remains untreated, meaning destruction of the thyroid gland can continue despite thyroxine treatment. It is, however, possible to use blood tests to check for these antibodies and so the naturopathic practitioner could urge the client to request this from a medical professional if autoimmune thyroiditis is suspected.

(b) The client is deficient in nutrients that are essential for normal thyroid function.

The following table shows certain nutrients essential for optimum thyroid functioning.

Nutrient	Role in thyroid function
Vitamin A	Aid the manufacture of thyroxine (T4) by the thyroid gland.
Iodine	
Zinc	
Tyrosine	
Selenium	Aid conversion of T4 to the active version of thyroxine (T3).
Copper	
Iron	
Zinc	
Vitamin D	May have a role in metabolism necessary for cells to use T3.

Table 2. Roles of nutrients essential for normal thyroid health.⁽⁹⁾

Iodine is of important as it is a key component of thyroxine. Iodine deficiency can result in impaired production of thyroid hormones and thereby lead to hypothyroidism.

Iodine is not manufactured by the body, so there is reliance on dietary intake. Common salt was often fortified with iodine, but many countries have stopped this practice. The World Health Organisation (WHO) estimates around 13% of the world's human population suffer from diseases linked to iodine deficiency.^(xxi)

Iodine is generally present in ocean foods such as fish, shellfish, seafood and seaweed. Much of the soil in the world is now iodine-poor and so meat is no longer a reliable source of iodine.

Deficiency of selenium, iron and vitamin A can exacerbate the effects of iodine deficiency.^(xxii)

Selenium is also of importance as some enzymes crucial for activation and deactivation of thyroid hormones are selenium-dependent, most notably iodothyronine deiodinases. In addition, selenium is present as selenocysteine in enzymes that protect the thyroid gland from free radical damage,^(xxii) specifically selenium is key to the manufacture of the enzyme glutathione peroxidase that combats effects of hydrogen peroxide. This is of added importance because a side effect of raising iodine levels, for example by supplementation, is an increase in hydrogen peroxide production which will further disrupt the thyroid.⁽⁹⁾

Iron is often found to be deficient in people with autoimmune thyroiditis^{(9)(xxiii)} and there is evidence suggesting iron supplementation can correct low levels of thyroid hormones in women with anaemia.⁽⁹⁾

In addition to the micronutrient roles highlighted in Table 3, **vitamin B12** has also been associated with impaired thyroid function.^{(9)(xxiv)}

6. Treatments.

Before treatment, it must be remembered that a naturopathic practitioner who is not qualified to make medical diagnoses must refrain from doing so. It is, however, possible to establish if there are underlying food intolerances associated with inflammation. This way, advice can be given even if a client refuses to pursue a medical diagnosis or, if for any reason, one is not forthcoming.

The client should be asked to complete a diet and symptom analysis.⁽⁵⁾ This can begin to show up aspects that would benefit from action and it can be used to monitor progress as the client moves through suggested protocols.

An avoidance/ elimination and challenge test for food intolerance should be high priority. Four food groups are eliminated from the diet for a period of two weeks, followed by reintroduction one group at a time over the following four weeks. The four food groups tested are wheat, dairy, eggs and yeast.⁽⁸⁾

If a client who has been medically diagnosed with hypothyroidism shows intolerance to one or more foods, this can suggest autoimmune thyroiditis. If a client has not been diagnosed with hypothyroidism, however, the positive test may indicate an inflammation is present which may be having negative effects on the thyroid. For confirmation, a practitioner could suggest a client may ask their medical practitioner to order a total thyroid profile test.

Following a positive food intolerance test, culprit foods should be eliminated from the diet and if improvements in any symptoms are notable it is probable an inflammation is present. In this case, it may be beneficial to introduce treatments to reduce metabolic sediment, cytokine production and dysbiosis.⁽⁹⁾ In any case, the client

should be advised to move to a completely gluten free diet, as non-celiac gluten sensitivity (NCGS) is commonly associated with autoimmune thyroiditis.^(xxv) Regaining intestinal health and slowing down or stopping the destruction of the thyroid gland by inflammation should be primary goals of treatment. Selenium supplementation at a minimum daily dose of 200 µg should be recommended. Action of selenium is discussed in more detail under 'further treatment' below.

Nutritional deficiencies and other nutritional considerations may have been revealed by responses on a *diet and symptom analysis questionnaire* and these can be assessed with a view to suggesting other nutritional adjustments. The client can add to their diet a number of foods that may increase their intake of various beneficial nutrients. Some good options are shown in Table 3.

Food	Benefits
Liver	Provides iron, vitamin A and vitamin D
Brazil Nuts	Two or three per day are a good source of selenium
Lentil and lemon soup	For iron
Nuts	For zinc
Cod liver oil	A good source of vitamins A and D
Blue or purple fruits or berries	Excellent for anti-inflammatory action

Table 3. Some possible additions to a client's diet and some of their benefits.

Supplementation of micronutrients can be minimal at the start of treatment, thus favouring dietary changes, although some may be considered before assessment of effectiveness of these changes. Selenium has been mentioned previously, but in addition to this vitamin A can be recommended because hypothyroidism interferes with conversion of vitamin A to beta carotene. Symptoms suggesting a concurrent condition of insulin resistance and associated hyperinsulinaemia, where there are abnormally high levels of insulin in the body, could be treated using chromium, a vitamin B complex and magnesium, even in the early stages of treatment.⁽⁹⁾

Plastic food packaging and drink containers can contain organochlorine chemicals, many of which are toxic even in small amounts. Some organochlorines are similar in composition to thyroid hormones and will compete with them, binding to the same cellular sites and thereby inhibiting their actions. Two of these chemicals are polychlorinated biphenyls (PCBs) and dioxins. PCBs are now banned but were used to make electrical goods like transformers and refrigerators. They remain in the environment, for example they have been found in fish. Dioxins are produced during incineration of household waste or PVC, found in products containing or treated with bleach, found within bleached paper in cigarettes and are a byproduct from the plastics industry.⁽³⁾ It is possible to alert clients to dangers from these chemicals, where they may be present and how they might be avoided.

Goitrogen substances are present in some foods, albeit in low quantities. These substances interfere with uptake of iodine and so can be significantly problematic in

hypothyroidism where iodine is already likely to be deficient. Foods containing goitrogens include the *brassic*s broccoli and cabbage, other cruciferous vegetables, radishes, cassava, rapeseed, peanuts and millet. Cooking these, with the exception of cassava, reduces goitrogenic effects and so the client should be advised. Unfermented soy foods also negatively impact thyroid function and should be avoided.⁽⁹⁾

Fluoride is another substance that interferes with iodine and has been associated with hypothyroidism. One study found people living in an area where drinking water was fluoridated were twice as likely to develop hypothyroidism compared to those in an area with non-fluoridated water.^(xxvi)

A client could buy a water filter to remove a lot, if not all, the fluoride from their drinking water. Recommendations should be made with care, as some claims of effectiveness might not be accurate and there may be commercial exaggerations.^(xxvii) A strategic search by the practitioner can reveal genuine fluoride removing water filters that can be identified to the client.

Clients should be advised to avoid swallowing fluoride-containing toothpastes or other such products.⁽⁹⁾

Mercury is a problem because it occupies iodine binding sites (see Section 3). Clients who have to have future dental fillings should be advised to request non-amalgam fillings. For clients who have existing amalgam fillings, they might be encouraged to have them replaced, perhaps gradually, by white composite ones. The practitioner should understand this process may be expensive or out of the price range of some people and care should be taken avoid excessively alarming clients or causing them stress.

Heart rate monitoring may be useful for clients who have been prescribed and are taking thyroid medication, typically Levothyroxine. Such a practice should be advised in the early stages of treatment. If the resting heart rate increases significantly, clients should visit their medical doctor to request a review of their thyroid medication, which may have become too strong for their new circumstances.

Exercise is very beneficial for thyroid function and clients should be encouraged to engage in it regularly. For those who are not used to much exercise, this can be gradually introduced so that they are not overwhelmed. A good overall aim would be to exercise around three or four times per week for periods of around half an hour. Brisk walking is an effective exercise regime many people would have access to. The practitioner can take care to guide a client in ways that allow for any restrictions being experienced, including tiredness or lack of motivation. It should be possible to form an exercise program that fits most people's situations, so they become encouraged rather than demoralized. Exercise regimes that begin with simple gentle movements can be extended after some time when the client may be more motivated.

Further treatment. Sometime after the initial recommendations, more dietary counselling may be given so further additions can be explained and considered.

Special attention can be paid to antioxidant and anti-inflammatory foods such as turmeric, green tea, purple berries and fish oils.

Although iodine deficiency is highly likely, supplementation is not beneficial in the early stages of treatment. This is because iodine promotes production of hydrogen peroxide which will exacerbate thyroid destruction. Selenium has an essential role in combatting hydrogen peroxide as it is a key element of glutathione peroxidase, an enzyme capable of deoxidizing hydrogen peroxide.⁽³⁾ Early stage treatment should have included selenium supplementation. Regular re-checking of TSH levels should be encouraged and if they have significantly fallen, perhaps after a few months of selenium supplementation, iodine supplementation might be considered. A combination of iodide and iodine is suggested as most effective, for example Lugol's Solution.⁽⁹⁾ Careful monitoring should be continued with regard to TSH levels.

Adding supplements may be a consideration if a client's progress seems slow or halted after about three or four months. This should be done with care, one at a time, to avoid supplements competing for absorption.⁽⁹⁾ Clients should be advised to seek good quality supplements to ensure effectiveness. Practitioners should be armed with information about respected types, manufacturers and sources so advice about procurement can be forthcoming. Table 2 and 3 give some useful information about supplements. In addition to selenium and vitamin A that may have been recommended earlier in the treatment, some of particular interest are iron, zinc and L-tyrosine.

For supplements that are going to compete, a good strategy is to alternate the days on which each is taken, for example selenium one day, zinc the next. In all cases, recommended doses should be taken.

Herbal treatments may be appropriate for some clients, although care should be taken not to recommend any iodine rich remedies in the early stages of treatment. The practitioner could, instead, suggest adaptogenic herbs that may reduce stress, for example Siberian ginseng or Rhodiola Rosea.⁽⁹⁾

Armour thyroid is a non-pharmaceutical alternative to thyroxine medications such as Levothyroxine. For clients who are slow to respond to synthetic thyroxine medication, armour thyroid may boost the effects. Some medical doctors will be open to adding armour thyroid to an existing prescription or switch altogether. Some experts have expressed doubt about whether armour thyroid can provide a standardized dose and thereby stabilize thyroid hormone presence in the body.^(xxx) Armour thyroid is inappropriate for vegetarians, vegans and people of some religious persuasions, as it made from pig thyroid.

Pregnancy places extra demands on the body's need for iodine as natural production of thyroxine (T4) almost doubles. Iodine deficiency in pregnant women is risky for the developing baby, potentially causing neurological problems that may impair cognitive and intellectual abilities along with a plethora of other neurological effects.⁽¹⁾ Pregnant women whose level of TSH is greater than 2.5mIU/L are

generally considered by the medical profession as having subclinical hypothyroidism.^(xxxix)

The naturopathic practitioner must refrain from treating pregnant women in the same ways as non-pregnant people and should refer them to medical specialist who will implement the proper accepted care programs. It is, though, acceptable to make simple dietary recommendations such as eating two or three brazil nuts for selenium and increasing sea food a little for added iodine.

(ii) Are symptoms present or the condition suspected, but hypothyroidism diagnosis has been rejected by a medical professional?

It can be seen on page 6 the reference range for what are considered as healthy TSH levels by many medical practitioners is wide. This means some people whose TSH level results fall within that range after testing may not have been diagnosed with hypothyroidism, yet have the condition. This can be a particular problem for people suffering from autoimmune thyroiditis because raised cytokines, known to be common within the autoimmunity and inflammation, can reduce TSH levels and thereby mislead conclusions.

A naturopathic practitioner must remember not to diagnose, but they can proceed as if autoimmune thyroiditis is present by following the treatment protocol in (i) above and in the meantime suggest that the client revisits their medical doctor to request a test for thyroid antibodies. If such a test positively identifies significant levels of these, continue with the treatment program as before, if the test is negative then the following options can be added.

Stress may be interfering with normal thyroid function, whereby there could be thyroid resistance. As seen on page 5, cortisol levels are affected by stress, rising when stress is high and in response to inflammation. High cortisol also raises levels of cytokines, which reduces TSH production. The practitioner should consider a variety of chronic stressors including infections, metabolic problems and life events. It may be possible to work with the client to reduce stressors so that cortisol, cytokine and serotonin levels can begin to rebalance.

High oestrogen levels can disrupt thyroid hormone operation. A practitioner may look for history that might indicate such an imbalance. Treatment can centre on the liver's ability to break down excess oestradiol and encourage this process, for example by increasing consumption of cruciferous vegetables, particularly savoy cabbage and Brussels sprouts. Grapefruit should be avoided as it interferes with oestrogen metabolism. Increasing dietary fibres may be an option, depending on the client's current diet, with nuts and seeds being particularly beneficial as they create enterolactone and enterodiol which are both anti-oestrogens.⁽⁵⁾

Symptoms addition to hypothyroidism may be present and treated accordingly. The client's diet and symptom analysis will be useful as reference for some of these and continual monitoring is desirable so that disappearing symptoms can be identified. There may be other symptoms a client reports from time to time, some of

which may be indirectly linked to hypothyroidism or TSH levels. For example specific carbohydrate cravings, ADHD, premenstrual water retention, anxiety, restlessness and lack of focus, in which case magnesium and vitamin B complex supplementation should be recommended straight away.

(iii) *Are symptoms present yet neither the client nor a physician considered the thyroid may be underactive?*

There are cases of hypothyroidism that the medical profession will fail to spot, with symptoms sometimes attributed to other conditions, typically *depression*. It is perhaps easy to see how a person may go along with a diagnosis from a medical doctor and therefore fail to consider there may be another explanation. If a client seems to fit this scenario, they should be advised to request a thyroid test from their doctor and, if they are able, to take the results along to a naturopathic consultation. TSH levels above 2.0 might be considered as borderline hypothyroidism and treatment can continue from there.

In the meantime, the client's *diet and symptom analysis* can be used to determine how they are treated, for example they may benefit significantly from a food intolerance test and subsequent protocol.

6. Conclusion.

Understanding hypothyroidism is a complex task and many people, including practitioners and clients, can be quite daunted by it. It is, though, possible to move through complicated aspects of symptoms, causes and treatments to arrive at some clarity and offer advice that is meaningful.

The author of this dissertation has discussed hypothyroidism with some people known to him who are either 'suspected' or diagnosed as having an underactive thyroid. Some comments are typical within this group, indicating frustration about the lack of information offered. It was commonplace for individuals to feel 'forgotten' or 'ignored' by some professionals they had seen. Perhaps a naturopathic practitioner could fill in some gaps for some sufferers, offering them information and dietary guidance that may have been missing.

While the naturopathic practitioner is not there to make medical diagnoses, they can look at a person's symptoms, their diet and some aspects of lifestyle that may exacerbate conditions like hypothyroidism and offer some counselling aimed at allowing the body to begin repairing itself.

Word Count: 5047

7. References.

Most information sources were coursebooks from the School of Modern Naturopathy International 1 year Intensive Course. The numbers in brackets shown in superscripted text refer to the number of the Module booklet. Other references are given below:

- (i) <https://www.lifeextension.com/protocols/metabolic-health/hypothyroidism>
- (ii) <https://medschool.co/tests/tft/thyroid-physiology>
- (iii) http://umr.adam.com/pages/guide/reftext/html/endo_sys_fin.html
- (iv) <https://www.78stepshealth.us/human-physiology/mechanism-of-thyroid-hormone-action.html>
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- (vi) <https://www.townsendletter.com/Dec2008/hypothyroid1208.htm>
- (vii) <https://hypothyroidmom.com/300-hypothyroidism-symptoms-yes-really/>
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- (xxxi) <https://pubmed.ncbi.nlm.nih.gov/24622371/>