

Article 8 – Thyroid function; Part One

The thyroid gland (which is located in your throat) produces the master metabolic hormone that controls every function in your body. The hormones it produces determine the speed with which every function and activity in your body is carried out. It influences your mood; the quality of your hair, skin and nails; your sex drive; your heart function; cholesterol; fertility; and hormonal balance. Improving thyroid function can reduce joint and muscle aches and pains, lift your body temperature and increase your metabolism. Having a healthy thyroid function is critical to being able to maintain a healthy weight, and thyroid function which is too high will result in excessive weight loss, while thyroid function which is too low will cause excessive weight gain or an inability to lose weight. Because the more common problem is low thyroid function, the aspect of thyroid function we will be discussing here is that of hypothyroidism. Because of the amount of information, it will be necessary to cover this in the course of two articles, so keep an eye out for the next one too.

The thyroid gland sits in your neck and is responsible for producing two major thyroid hormones. About 90% of its production is T4, a relatively inactive form of the hormone made from the amino acid tyrosine and the mineral iodine. Another 7 % of hormone produced by the gland is called T3. This is the active form of the hormone. T4 is converted to T3 in your liver; a process which requires zinc and selenium. The thyroid gland also produces a smaller amount of T2. Not a lot is known about this particular thyroid hormone, but it may yet be proved in future to be an important component in the function of the thyroid gland. According to current knowledge, T3 is the most vital of the thyroid hormones. This is because it specifically acts on special receptors on the nucleus of all cells which tell the DNA contained in the cell's nucleus to turn up your metabolism, to increase fat-burning in the mitochondria (the little factories within the cell which convert food and oxygen into energy), and to generally make every system in your body work at the right speed. Thyroid hormone function is part of your endocrine or hormonal system and its major role is to stimulate metabolism (energy creation) which is why it affects almost every function in your body. All cells need to make energy to survive and to work properly. Because no tissue or cell type goes unaffected this explains why the symptoms a breakdown causes are so varied in nature;.

Thyroid hormone “cross talks” with every other hormone in your body, including insulin, cortisol and your sex hormones. The production and release of thyroid hormone in the thyroid gland is regulated by a feed back system in your brain which is controlled by the hypothalamus and pituitary glands. They make thyroid releasing hormone (TRH) and thyroid stimulating hormone (TSH) respectively and are the “instructors” for the thyroid gland. If everything works as designed, you will make the hormone you need, be able to use it and there should be no issues. However, factors such as allergy, poor diet, stress, chronic pain and infection can upset the delicate balance of these hormones and their ability to be effective.

If you produce too little T3 or T4, or if the T4 you produce is not converted efficiently into T3 your whole system will slow down. There will be just as much of a problem if you have enough thyroid hormone in circulation but the cells in your body lack the ability to use it efficiently. Either way, your metabolism and mitochondria won't get the proper signals and you will suffer from a number of symptoms caused by hypothyroidism. You may also become more inflamed and develop additional problems with your insulin levels, which will mean that you will have a more difficult time metabolizing the sugars in your blood. Hello fatigue and weight gain!

The symptoms of hypothyroidism are varied, often subtle in nature and are usually chronic by the time they are detected, which means that they have affected the person for a long time before the cause has been investigated. The most common symptoms include tiredness, weight gain, cold hands and feet even in warm climates, a low body temperature and sensitivity to the cold, chronically dry skin, poor immune function, a hoarse voice, low blood pressure and heart rate, thinning of the outer third of the eyebrows, heavy menstrual bleeding, worsening PMS, constipation and brain fog. Not everyone with weight issues will have low thyroid function, but thyroid function can be an important reason why some people find it impossible to lose weight even when they have changed their eating habits and increased their exercise levels.

Where low thyroid function is suspected, a blood test for TSH and sometimes T3 and T4 will be done. This will pick up people with a detectable shortage of any of these hormones, and depending on the ratios of them, may also provide insight as to the efficacy of conversion from T4 to T3. However, a large number of people presenting with low thyroid symptoms may not have a low enough level to be detected through a blood test, but their levels may be low enough to affect their body function. These are the people we refer to as having sub-clinical hypothyroidism, and they usually respond well to natural treatment. One of the best ways of checking thyroid function other than through a blood test is to check your body temperature in the morning and to fill out a thyroid questionnaire (available through the clinic). Because the thyroid regulates the speed with which all processes take place in the body and those processes generate heat, the basal temperature is usually a good indicator of thyroid function.

To check your basal temperature, use a digital thermometer and place it by the bedside ready for the morning. At the same time every morning for 10 days, take your temperature before getting out of bed, and before sitting up or doing any other movement. Record the temperature. At the end of the 10 days, take the average reading. For menstruating women, the reading should be taken from the first day of menstruation. For every one else, start on any day. If chemical reactions in your body are taking place at the right speed the average temperature will be 36.5 degrees C or higher. An average which is consistently lower than this indicates the thyroid is sluggish or that the uptake of hormone is poor and needs to be addressed.

To get the best result from treatment, it is important to look at all factors which may be implicated. The most obvious ones are nutritional deficiencies; in particular zinc and selenium which are required for T3 conversion and iodine which enables thyroid hormone to be built and released. Other issues arise if there is a shortage of vitamin A and omega 3 essential fatty acids because these are required to enable the cell receptors to pick the hormone up. A blood test can not tell you how well someone is taking up thyroid hormone. This means that some people can have an apparently "normal" blood test because their hormone levels are fine, but because they have a problem with taking up the hormone efficiently they still have all the symptoms of hypothyroidism.

The indirect effect of stress on the thyroid gland is another key factor and should never be underestimated. If a person has been under stress for a long time or has had ongoing internal stress factors such as chronic digestive issues, allergies or pain, the body will step up its production of cortisol in an effort to maintain normal function. Elevated cortisol levels directly affect the feedbacks between the hypothalamus and pituitary glands in the brain and the adrenals (called the HPA axis), and this will often

have a profound effect on the thyroid gland as a result because the thyroid relies upon hormones from the hypothalamus and pituitary to instruct it.

The final major contributor to thyroid dysfunction is a breakdown in the digestive function. The thyroid gland uses an amino acid called tyrosine and the mineral iodine to build thyroid hormone. Poor digestive function will reduce the amount of these substances available thereby impacting on how well thyroid hormone can be produced, because adequate levels of hydrochloric acid (HCL), pepsin and good bile production in the liver are needed to break protein into amino acids and to take up minerals properly. Regular use of antacids can also contribute to this problem because they reduce the amount of HCL available and stop the stomach from doing its job effectively. In this case it is essential that problems with either stomach function or bile production are addressed.

In part two on thyroid function I will continue with further information on how to support healthy thyroid function in relation to weight management.

If you require further help, please contact us at The Self Heal Clinic 06 304 8177. The dispensary is open Tuesday, Thursday, Friday and Saturday.