THE OVERVIEW OF THYROID SUPPLEMENTATIONS

SUPACHADA BOONVISUT

MASTER OF SCIENCE

PROGRAM IN ANTI-AGING AND REGENERATIVE SCIENCE

MAE FAH LUANG UNIVERSITY

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ABSTRACT

This independent study was conducted to overview the role of thyroid supplements for general public. It is for information purpose only. The study is designed to interview 30 doctors who are treating thyroid patients and interview of anonymous thyroid patients with hypothyroidism and hyperthyroidism.

The research reveals, that supplementations could help to support thyroid patients. From the interview with doctors who are treating thyroid diseases and anti-aging medicine, the results showed that half of the doctors are confident in the benefits of the supplements and are using them to help the patients. Furthermore, all of the doctors agree that with healthy food and good lifestyle can help improved the health of thyroid patients.

Keywords: Goiter/Thyroid support/Hypothyroidism/Hyperthyroidism

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CHAPTER 1

INTRODUCTION

The thyroid is one of the largest endocrine glands in the body; it is located in front of the neck. The thyroid produces hormones that affect your body's metabolism and energy levels. There are different types of thyroid diseases. They are among the most common medical conditions to date, and five times more common in women than in men. There are a variety of factors that can contribute to the development of thyroid problems. Disease of the thyroid gland can be categorized into 3 groups, which are: Goiter, Hypothyroidism and Hyperthyroidism.

1.1 Goiter

A goiter is an enlargement of the thyroid gland. It is not cancer. There are different kinds of goiters. A simple goiter can occur for no known reason, or when the thyroid gland is not able to produce enough thyroid hormone to meet the body's needs. The thyroid gland makes up for this by becoming larger.

1.1.1 there are two types of simple goiter:

1.1.1.1 Endemic (colloid) goiter

1.1.1.2 Sporadic (nontoxic) goiter

Colloid goiters occur in groups of people who live in areas with iodine-poor soil. These regions are usually away from the seacoast. People in these communities might not get enough iodine in their diet (iodine is needed to produce thyroid hormone).

The use of iodized table salt today prevents iodine deficiency. However, the Great Lakes, Midwest, and inner mountain areas were called the “goiter belt,” because a high number of goiter cases occurred there. A lack of enough iodine is still common in central Asia, the South America, and central Africa.

In most cases of sporadic goiter the cause is unknown. Occasionally, certain medications such as lithium or aminoglutethimide can cause a nontoxic goiter.

1.1.2 Inherited factors may cause goiters. Risk factors include:

1.1.2.1 Age over 40 years

1.1.2.2 Family history of goiter

1.1.2.3 Female gender

1.1.2.4 Not getting enough iodine in the diet

The main symptom is a swollen thyroid gland. The size may range from a single small nodule to a large neck lump.

1.1.3 The swollen thyroid can put pressure on the trachea and esophagus, which can lead to:

1.1.3.1 Breathing difficulties (may rarely occur with very large goiters)

1.1.3.2 Cough

1.1.3.3 Hoarseness

1.1.3.4 Swallowing difficulties

There may be neck vein swelling and dizziness when the arms are raised above the head (Eckman, 2010b)

Treatment: Most small- to moderate-sized goiters can be treated with thyroid hormone in the form of a pill. By supplying thyroid hormone in this fashion, the pituitary will make less TSH (Thyroid stimulating hormone), which should result in stabilization in size of the gland. This technique often will not cause the size of the goiter to decrease but will usually keep it from growing any larger. Patients who do not respond to thyroid hormone therapy are often referred for surgery if it continues to grow.

A more common indication for surgical removal of an enlarged thyroid is to remove those glands that are large enough to cause compression on other structures in the neck, such as the trachea and esophagus. These patients will typically complain of a cough, a slight change in voice, or nighttime choking episodes because of the way that the gland compresses the trachea while sleeping. (Norman, 2010a)

1.2 Hyperthyroidism

Hyperthyroidism is a disorder that occurs when the thyroid gland makes more thyroid hormone than the body needs. It is sometimes called thyrotoxicosis, the technical term for too much thyroid hormone in the blood.

1.2.1 Hyperthyroidism has several causes, including

1.2.1.1 Graves' disease

1.2.1.2 One or more thyroid nodules

1.2.1.3 Thyroiditis, or inflammation of the thyroid gland

1.2.1.4 Ingesting too much iodine

1.2.1.5 Overmedicating with synthetic thyroid hormone, which is used to treat underactive thyroid

Rarely, hyperthyroidism is caused by a pituitary adenoma, which is a noncancerous tumor of the pituitary gland. In this case, hyperthyroidism is due to too much TSH. Hyperthyroidism has many symptoms that can vary from person to person.

1.2.2 Some common symptoms of hyperthyroidism are

1.2.2.1 Nervousness or irritability

1.2.2.2 Fatigue or muscle weakness

1.2.2.3 Trouble sleeping

1.2.2.4 Heat intolerance

1.2.2.5 Hand tremors

1.2.2.6 Rapid and irregular heartbeat

1.2.2.7 Frequent bowel movements or diarrhea

1.2.2.8 Weight loss

1.2.2.9 Mood swings

1.2.2.10 Goiter, which is an enlarged thyroid that may cause the neck to look swollen Women are five to 10 times more likely than men to developed hyperthyroidism. Adults, particularly women, should have a blood test to detect thyroid problems every 5 years starting at age 35.

1.2.2.11 Certain factors can increase chances of developing thyroid disorders. If:

1. have had a thyroid problem before, such as goiter or thyroid surgery
2. have pernicious anemia; type 1 diabetes; or primary adrenal insufficiency, a
2 hormonal disorder
3. have a family history of thyroid disease
4. eat large amounts of food containing iodine, such as kelp, or use iodine containing medications such as amiodarone, a heart medication
5. are older than 60 years
6. have been pregnant or delivered a baby within the past 6 months

Getting tested routinely helps uncover thyroid problems, especially subclinical problems. Subclinical means that a person has no apparent symptoms. Some doctors treat subclinical hyperthyroidism immediately; others prefer to leave it untreated but monitor their patients for signs that the condition is worsening. (Norman, 2010c)

Treatment: Antithyroid medications prevent the thyroid from producing excess amounts of T4 and T3 hormones. The symptoms should gradually subside within three months, patients may need to stay on the medication for more than a year, and will need to be gradually tapered off. These medications target the thyroid gland directly to reduce T4 and T3 hormone production.

Sometimes, the physician may also prescribe a type of antithyroid medication that is known as a beta blocker and works more generally throughout the body. It belongs to a class of medications used for many medical conditions, such as treatment of hypertension and cardiac arrhythmias. (Milas & Rehan, 2010)

Beta blocker: Hyperthyroidism can cause a dangerous increase in heart rate in some patients. In these cases, doctor may use beta blockers to reduce the heart rate. Beta blockers are not for everyone, though. If the patients have asthma or diabetes, these medications may aggravate their conditions. (Milas & Rehan, 2010)

Radioactive iodine is the most widely recommended permanent treatment of hyperthyroidism. This treatment takes advantage of the fact that thyroid cells are the only cells in the body, which have the ability to absorb iodine. By giving a radioactive form of iodine, the thyroid cells, which absorb it, will be damaged or killed. Because any other cells in the body do not absorb iodine, there is very little radiation exposure, or side effects, for the rest of the body. Radioiodine can be taken by

mouth without the need to be hospitalized. This form of therapy often takes one to two months before the thyroid has been killed, but the radioactivity medicine is completely gone from the body within a few days. The majority of patients are cured with a single dose of radioactive iodine. The only common side effect of radioactive iodine treatment is under activity of the thyroid gland. The problem here is that the amount of radioactive iodine given kills too many of the thyroid cells so that the remaining thyroid does not produce enough hormone, a condition called hypothyroidism. (Radiological society of North America, 2010)

Surgery the total or partial surgical removal of the thyroid is called a thyroidectomy. A thyroidectomy, when performed by an experienced surgeon, is a safe and effective treatment. (Milas, & Rehan, 2010)

1.3 Hypothyroidism

Hypothyroidism is a condition in which the thyroid gland does not produce enough thyroid hormone. The thyroid gland is located in the front of the neck just below the voice box, larynx. It releases hormones that control metabolism. The most common cause of hypothyroidism is inflammation of the thyroid gland, which damages the gland's cells. Autoimmune or Hashimoto's thyroiditis, in which the immune system attacks the thyroid gland, is the most common example of this. Some women develop hypothyroidism after pregnancy.

Other common causes of hypothyroidism include:

1.3.1 Congenital (birth) defects

1.3.1.1 Radiation treatments to the neck to treat different cancers, which may also damage the thyroid gland

1.3.1.2 Radioactive iodine used to treat an overactive thyroid (hyperthyroidism)

1.3.1.3 Surgical removal of part or all of the thyroid gland, done to treat other thyroid problems

1.3.1.4 Viral thyroiditis, which may cause hyperthyroidism and is often followed by temporary or permanent hypothyroidism

1.3.2 Risk factors include:

1.3.2.1 Age over 50 years

1.3.2.2 Being female

1.3.3 Early symptoms:

1.3.3.1 Being more sensitive to cold

1.3.3.2 Constipation

1.3.3.3 Depression

1.3.3.4 Fatigue or feeling slowed down

1.3.3.5 Heavier menstrual periods

1.3.3.6 Joint or muscle pain

1.3.3.7 Paleness or dry skin

1.3.3.8 Thin, brittle hair or fingernails

1.3.3.9 Weakness

1.3.3.10 Weight gain (unintentional)

1.3.4 Late symptoms, if left untreated:

1.3.4.1 Decreased taste and smell

1.3.4.2 Hoarseness

1.3.4.3 Puffy face, hands, and feet

1.3.4.4 Slow speech

1.3.4.5 Thickening of the skin

1.3.4.6 Thinning of eyebrows (Eckman, 2010a)

Treatment: Hypothyroidism is usually quite easy to treat. The easiest and most effective treatment is simply taking a thyroid hormone pill once a day, preferably in the morning. This medication is a pure synthetic form of T4, which is made in a laboratory to be an exact replacement for the T4 that the human thyroid gland normally secretes. It comes in multiple strengths, which means that an appropriate dosage can almost always be found for each patient. The dosage should be re-evaluated and possibly adjusted monthly until the proper level is established. The dose should then be re-evaluated at least annually. If you are on this medication, check the levels at least yearly. However, this simple approach does not hold true for everybody. Occasionally the correct

dosage is a bit difficult to pin-point and therefore you may need an exam and blood tests more frequently. Also, some patients just don't do well on some thyroid medications and will be quite happy on another. (Norman, 2010b)

This study is an overview of thyroid conditions, vitamins, foods and supplements that may play a role in improving the health and support thyroid patients in Bangkok. It covered thyroid diseases, the advantage of supplements and food in overall, focused on hypothyroidism and hyperthyroidism.

CHAPTER 2

LITERATURE REVIEW

2.1 Supplementations

Disease of the thyroid gland can be categorized into 3 groups, which are: Goiter, Hypothyroidism and Hyperthyroidism. Goiter is an enlargement of thyroid gland. It usually occurs when thyroid glad is not functioning properly. They are classified in different ways. Hypothyroidism is a condition characterized by abnormally low thyroid hormone production. There are many disorders that result in hypothyroidism. These disorders may directly or indirectly involve the thyroid gland. Because thyroid hormone affects growth, development, and many cellular processes, inadequate thyroid hormone has widespread consequences for the body. Hyperthyroidism is a condition in which an overactive thyroid gland is producing an excessive amount of thyroid hormones that circulate in the blood.

In the treatment of thyroid diseases apart from hormonal suppressant, replacement or surgical intervention, thyroid supplements are prescribes by some doctors in some patients for conditions and some circumstances. Manufacturers of food supplements claim some benefits in addition in mainstream thyroid treatment. (Shames & Shames, 2007)

The only hypothyroid condition, in which iodine is administered as the treatment, is iodine deficiency hypothyroidism. Iodine is a double-edged sword for thyroid sufferers. The patients need it but not too much of it. Additional iodine can become a thyroid problem. The iodine dilemma is the major nutritional problem facing everyone. The iodine deficiency diseases account for incalculable suffering in the form of goiter, miscarriage, infertility, and terrible sickness. The best natural source of iodine is kelp and other seaweeds. These sea vegetables are rich in natural iodine, an element that feeds the thyroid and is vital for the production of thyroid hormones. Iodine can also be found in table salt. (Shames & Shames, 2007)

Iodine With Vitamin E, when people with underactive thyroid glands take 4mg of iodine and 600 units of vitamin E, it has been found that the amount of iodine taken up by the gland increases and the quantity of thyroid hormones in the blood also increase, almost immediately and markedly. (Collins, 2007)

Copper is important in thyroid metabolism, especially in hormone production and absorption. Copper stimulates the production of the thyroxine hormone (T4), and prevents over-absorption of T4 in the blood cells by controlling the body's calcium levels (Calcium is required for the stabilization of cell membranes and reduces cell permeability). Copper and Zinc are two supplements that work together as a pair. Both play an important role in maintaining thyroid gland and preventing thyroid disease and other problems. (Josephovic, 2007)

Zinc is needed both before and after these production and conversion processes. Zinc is necessary for the TRH to stimulate the pituitary gland, which signals the thyroid gland to produce thyroid hormone. Moreover, zinc is needed at the intracellular level to help the thyroid nuclear receptors attach and drive the reading of the DNA genetic code; the main function of thyroid hormone is to help put the genetic code into action. The proper balance of both copper and zinc are needed to prevent thyroid disease and maintain the right amount of thyroid hormones in the body. The correct ratio of Zinc to copper is 5:1 for females and 10:1 for males. (Josephovic, 2007)

The two major thyroid diseases caused due to unbalanced levels of copper and zinc are:

1. Hyperthyroidism: Copper and zinc work together in the body as important antioxidants. Deficiency of zinc causes a deficiency of the antioxidant enzyme Superoxide dismutase (SOD), and leads to oxidative stress and antioxidative response in the patients of hyperthyroidism. Deficiency of copper also causes hyperthyroidism because the thyroid gland produces excessive hormone when the body is copper deficient.

2. Hypothyroidism: An imbalance of zinc and copper ratio in the body causes hypothyroidism, which is a thyroid disease that causes the thyroid gland. Research has shown that supplementation of the diet with first zinc, then copper, helps in hypothyroidism treatment and increases thyroid function. Zinc deficiency also causes low metabolic rate, which often results in immune dysfunction, so this is why it is important to get the right levels of zinc first. (Tran, 2011)

Selenium is crucial in both the production of T-4 thyroid hormone (thyroxine) in the thyroid gland, as well as in the conversion of T-4 to T-3 thyroid hormone, which the active form called thyronine. It is also believed to help if increase selenium intake, eating foods such as whole wheat bread, bran, Brazil nuts, tuna, onions, tomatoes and broccoli. Include some of these foods on a regular basis. (Shames & Shames, 2007)

Vitamin A is of utmost importance to the thyroid gland and its proper function. If vitamin A is not enough it will limit the production of thyroid-stimulating hormone (TSH). Without enough of this hormone, thyroid gland activity is sluggish. Vitamin A occurs in two forms: retinol and beta-carotene. Retinol comes from meat, animal products, poultry and fish. Beta-carotene comes from vegetables and fruit and was given its name because it was first isolated from carrots, one of the richest sources of this substance. (Langer, 1989)

Vitamin B-Complex is to help improve cellular oxygenation and energy, build the adrenals and the thyroid and calm the nerves. There are eleven 11 vitamins in the vitamin B complex and members are B1 (Thiamine), B2 (Riboflavin), B3 (Niacin and Niacinamide), B5 (Pantothenic acid), B6 (Pyridoxine), B7 (Biotin), B9 (Folic acid), B10 (Para-aminobenzoic acid), B12 (Cobalamin), Choline and Insitol. (Smith, 2008)

Vitamin C helps thyroid hormone production and the metabolism of folic acid, tyrosine, and tryptophan, and it stimulates adrenal function and the release of norepinephrine and epinephrine, which are stress hormones. (Shames & Shames, 2007)

Vitamin D is necessary for thyroid hormone production in the pituitary gland, and possibly in the early stages of T-3 (thyronine) binding to its receptor (Shames & Shames, 2007).

Vitamin E is part of the necessary supporting apparatus that enables the deiodinase enzyme to convert T-4 (inactive thyroid hormone) into T-3 (the active type). Vitamin E is an excellent antioxidant protection as well as helping menopausal women avoid hot flashes without resorting to estrogen. (Smith, 2008)

Essential fatty acids are a must for glandular health and they improve over all health. These can be omega 3's and 6's from marine lipids, flax oil or flax seed, black current seed oil, evening primrose oil, or borage oil. (Smith, 2008)

Amino acids play a major role in supporting thyroid health. The amino acids supplements should be in the L configuration, or the DL configuration. This is the form found in nature and utilized by the human body. (Smith, 2008)

Coconut oil is another natural food that boosts thyroid function. Virgin coconut oil is praised by health experts for its ability to lower cholesterol and stabilize blood sugar. It is also been found to boost the thyroid, increasing metabolism, weight loss, and energy levels. The fatty acid chain in coconut oil is known as medium chain fatty acids (MCFAs) or medium chain triglycerides (MCTs). For the hypothyroid sufferers, the MCTs raise basal body temperatures, speed up the metabolism and promote weight loss as well. (Fife, 2001)

Multi-minerals; either liquid or chelated form. All minerals are involved in glandular heath. (Shames & Shames, 2007)

Estrogen causes food calories to be stored as fat. Thyroid Hormone causes fat calories to be turned into usable energy. Thyroid Hormone and Estrogen therefore have opposing actions. Estrogen dominance inhibits Thyroid action and lowers the rate of metabolism of the Body. Natural Progesterone inhibits Estrogen action. The symptoms of Hypothyroidism may also occur because of Estrogen Dominance (deficiency of Progesterone). Hypothyroidism, which results in weight gain and a host of other symptoms, can be corrected by the presence of Natural Progesterone in the body. Natural Progesterone levels can be enhanced in the body by supplementation of the diet with Herbal Dietary Supplement Wild Yam during the perimenopausal years and once corrected can be easily maintained by increasing the intake of protein rich food in the diet.

To increase Progesterone levels during the Menopausal years, topical application of Progest Gel containing Bioidentical Progesterone Hormone is recommended.

Many others presumed Thyroid dysfunctions such as falling hair, water retention, loss of memory; dry skin and Autoimmune Disorders are actually caused by Estrogen Dominance. (Norman, 2010b)

The crucial nutrient for Thyroid Hormone synthesis in the body is Iodine. Herbal Dietary Supplements like Kelp are a rich source of natural Iodine. Natural Iodine along with Tyrosine an amino acid can help the Thyroid manufacture normal levels of Hormone T3 and T4. In the presence of adequate levels of Natural Progesterone, Estrogen Dominance will disappear and the

Thyroid Gland / Body will begin functioning normally. For example, the symptoms of weight gain will disappear. (Norman, 2010b)

Kelp along with Tyrosine (and Wild Yam / Progest Gel in cases of Estrogen Dominance) can therefore increase the Rate of Metabolism of the body and result in corresponding Weight & Body Dimension reduction. Weight & Body Dimensions reduced in this manner have no rebound effect. (Norman, 2010b)

2.2 Foods for Thyroid Diseases

In general, the better the quality of food ingested, the healthier the thyroid gland will be, as well as every other human gland, organ and cell within the body. Some foods boost thyroid function, which are perfect for hypothyroid, underactive, or low thyroid patients, and others suppress thyroid function, which can help people with hyper or overactive thyroid, there are certain foods that are best for everyone to avoid, for a healthy thyroid gland.

2.2.1 Good Foods for Thyroid

Iodine: This mineral is a necessary component of T3 and T4. It combines with the amino acid tyrosine and gets converted into the two thyroid hormones. For this reason, getting sufficient amounts of iodine through fish, seaweed, iodized salt, and shellfish is critical for the optimal function of the thyroid. (Shames & Shames, 2007)

Low Glycemic Foods: The mechanism of insulin resistance is associated with thyroid diseases. Due to this strong association, a low carbohydrate, high protein diet is outlined. This includes adequate food combining at each meal and snack to incorporate protein, fat, fiber, and carbohydrate accordingly. In this way, glucose enters the bloodstream gradually, which in turn modulates the amount of insulin release. A controlled insulin production means a more efficient use of calories and less opportunity for the body to store calories. This all equates to lessening the chances of further weight gain and encouraging an environment conducive for weight loss. Limiting the following high glycemic foods, or at least not eating them alone, will help with a successful thyroid diet. (Zielke, 2010a)

Beets: Beet greens are an excellent source of the B vitamin, folate, and a very good source of manganese and potassium. Beet greens are a good source of dietary fiber, vitamin C, magnesium, iron, copper and phosphorus. (Zielke, 2010b)

Carrots: Contained Beta-carotene. It is a natural health booster enhances your health on various grounds and fills in the essential vitamins to your body like pro-vitamin A, B3, C and E. Other important advantages of carrot besides those mentioned above includes preventing various gastrointestinal complaints like colic and ulcers and it also prevents heart attacks and cancer by reduces cholesterol levels as it has high soluble fiber levels. Carrots are more nutritious when eaten cooked. The valuable nutrients lie either in or just beneath the skin. (The George Mateljan Foundation, 2003a)

Parsnips: contain potassium, silicon, phosphorus, sulfur and chlorine. Parsnips actively help the urinary system, bladder, and provide relief for kidney stones. The tops are rich in mineral elements, but can be mistaken for the wild variety, which contains poisons very detrimental to the body. The whole cultivated parsnips plant can be used. Eating raw is very good. Try juicing, chopping or grinding parsnips. (Raghuvanshi, 2010)

Peas: eaten fresh are very good. They are high in potassium and magnesium. Young fresh peas with the pods are good juiced or in salads but be sure to remove the stem and string them. Fresh peas juiced with their pods will be good for the pancreases. (The George Mateljan Foundation, 2003a)

Parsley: is one of the most potent foods of the common vegetable kingdom. It is rich in potassium, calcium, magnesium and chlorine. Parsley is so fibrous it is difficult to extract all the nutrients from the fibers. The juice is good for the optic system, kidneys, bladder, urethra and genital organs. It should be consumed with meat to help rid the body of the uric acid produced in the digestion of the meat. It is also helpful for swollen glands, swollen breasts and to dry up milk. (The George Mateljan Foundation, 2003c)

Onions: are beneficial to the mucous membrane. They are rich in carbohydrates, potassium, calcium, silicon, phosphorus and iron. (The George Mateljan Foundation, b., 2003)

Black walnut has a high content of iodine and is a thyroid stimulant. (Vitamins & health supplements guide, 2006)

Irish moss and kelp are used in combination to balance hormonal deficiency. They increase the metabolic rate, thyroid activity and the detoxifying function of the body, and increase blood circulation and soothe inflamed tissues. (Natural Health Ezine, 2010)

Protein: Since it takes more energy to break down protein than carbohydrates and fat, it is easy to see that metabolic rate would also increase in relation to protein intake. A thyroid diet entails eating good

Vitamins and Minerals: In general, a multi-vitamin is beneficial in a thyroid diet. Zinc has been shown to be a required mineral for the prevention of diminishing T3 levels, especially when caloric reduction takes place for weight loss purposes. Selenium behaves in a similar fashion. A daily sources of lean protein, such as fish, white meat poultry, legumes, egg whites, and lean cuts of beef. An adequate intake of protein will also deter hair loss that often accompanies an under active thyroid condition. (Zielke, 2010a)

Fiber: The recommended daily amount of fiber is 25 grams a day. Since fiber slows down the rate at which food, including simple carbohydrate, is digested, getting this quota is important for keeping insulin production in check when incorporating a thyroid-friendly diet into your lifestyle. High fiber foods include lentils, kidney beans, apples, pears, broccoli cauliflower, green leafy vegetables, whole grains, including bran and oats, almonds, and flaxseed to name a few. (Zielke, 2010a)

Other foods: potatoes, corn, turnips, bananas, grapes, oranges, pineapple, raisins, papaya, watermelon, white bread, bagels, rolls, baked goods, sugar, white rice, semolina pasta, refined flour products such as crackers, pretzels.

2.2.2 Bad Foods for Thyroid

A Goitrogen is a substance in some foods that prevents the thyroid gland from working correctly by blocking the uptake of iodine. Iodine is essential for the production and activation of thyroid hormone and is one of the main minerals that help speed up cellular metabolism.

Goitrogens get their name from the term goiter, which is an enlargement of the thyroid gland. The thyroid gland lies just above the collarbone in the neck area. If the thyroid gland is having difficulty making thyroid hormone, it may enlarge as a way of trying to compensate for inadequate hormone production and can be seen or felt as a soft pad about 2-5 inches in diameter on

the neck, usually on one side but occasionally on both sides. Goitrogens can induce hypothyroidism and goiter. (Moffat, 2005-2010).

Goitrogenic foods are typically high in sulfur, especially the Brassiform family of plants such as kale, cauliflower, Brussels sprouts, cabbage, kohlrabi and broccoli. Sulfur, copper, and iron interact with each other and need to be in perfect balance for everything to work correctly. Some researchers think that when you eat an excess of sulfur, it competes with iron and copper and can cause anemia. While many hyperthyroid people try to limit thyroid output by restricting their iodine and eating more goitrogen foods, this strategy can backfire. Iodine restriction causes the thyroid to increase in size (goiter) in an effort to filter more blood to get more iodine. When iodine is then re-introduced to the diet or accidentally ingested, the thyroid now grows even larger than before because now it has a larger capacity to do so.

Therefore the consumption of goitrogens to control hyperthyroidism is not a good strategy. It is better to increase foods high in copper as well as increase copper's effectiveness to normalize the thyroid function. After that, the body will tolerate iodine without increasing thyroid hormone production. (Moffat, 2005-2010)

Peanuts: contain Goitrogen, which is a chemical (natural chemical) that can cause difficulty for the thyroid gland to produce hormones. Goitrogen has less effect on the thyroid gland once the food is cooked. (Moffat, 2005-2010)

Sugar: it's present in almost everything, and holistic practitioners and even some mainstream doctors agree that white sugar suppresses the immune system. Blood sugar changes can bring on diabetes and hypoglycemia, both of which often co-occur in patients with thyroid disease, which means thyroid patients are at risk for blood sugar disorders, and vice versa for diabetics. Some thyroid patients report better energy and that their thyroid levels stabilize when they stop eating refined sugar. (Anisman-Reiner, 2009)

Among the elements or ingredients, which the Thyroid uses to make, thyroxine is a protein known as casein. The body manufactures its own casein out of the atoms present in the food. Casein is one of the important components of milk, but when cow's milk is used by humans of any age, it is not digested properly or completely under any circumstances. That is the reason why the use of milk not only creates a great amount of mucus in the system, but also has the tendency to disrupt the function of the Thyroid gland. The casein in cow's milk is 300% more

concentrated than that in mother's milk. When cow's milk is pasteurized or cooked by boiling, the casein is changed still worse than in its raw state. (Tom & Barb, 2003)

The two worst offenders for suppressing thyroid function are soy foods and cruciferous vegetables. Soy contains estrogenic compounds that can interfere with thyroid hormones and sex hormones, contributing to premenstrual syndrome (PMS), cramps, bloating, and menopause symptoms. Some people with hyperactive thyroid find that small amounts of soy help modulate the thyroid gland, but others prefer to avoid soy altogether: no tofu, TVP (texturized vegetable protein), tempeh, seitan, miso, or edamame. The main component in soy causing thyroid problems is isoflavones. Genistein is a soy isoflavone marketed as a hormone substitute for women and appears to reduce thyroid hormone output by blocking activity of an enzyme called thyroid peroxidase. This enzyme is responsible for adding iodine onto the thyroid hormones. Thyroid hormones must typically have three or four iodine atoms added on to their structure in order to function properly so this enzyme is pretty important. Most goitrogens are inactivated with heat, but there is some evidence that isoflavones in soy are not heat inactivated. (Moffat, 2005-2010)

Foods that stimulate the thyroid gland include caffeine (coffee, tea, cola, and chocolate,).

Summary: A thyroid diet can be an important part of an intervention plan for thyroid disease patients. Talking with others who have similar challenges can lead you on your specific path. Discussing relevant options with your healthcare professionals will also guide you in the right direction. A nutritionist can be instrumental in developing meal plans to address your individual thyroid needs. Keeping a food diary and getting regular exercise are both helpful habits toward a healthy thyroid diet. (Zielke, 2010a)

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Objective

This study is designed to overview the additional prescription for thyroid diseases, focusing on hypothyroidism/hyperthyroidism and the supplementations, for general public.

3.2 Hypothesis

This study is under the hypothesis that the supplements and good food will help to support thyroid patients.

3.3 Conceptual Framework

3.3.1 Subject population: 30 doctors who are treating thyroid diseases such as anti-aging specialists and doctors in general.

3.3.2 Doctors' profiles: gender, age range.

3.3.3. Attitude of doctors toward thyroid supplements (Iodine, Selenium, Zinc, Vitamin D, Vitamin E, Vitamin C, Vitamin A, Amino Acids and coconut oil)

3.3.4 Prescription of thyroid supplements.

3.3.4.1 If use any

1. Which one(s)
2. For how long

3.3.4.2 Satisfaction of the patients and the doctors

3.4 Benefits

Most of the treatments for thyroid patient always end with drugs. There should be more various options and information for thyroid patients to receive and consider in terms of improving their thyroid conditions.

3.5 Operational Definition

Goiter is an enlargement of the thyroid gland.

Hypothyroidism is a condition in which the thyroid gland does not produce enough thyroid hormone.

Hyperthyroidism is a disorder that occurs when the thyroid gland produce more thyroid hormone than the body needs.

Trachea is the bony tube that connects the nose and mouth to the lungs.

3.6 Research Methodology

This study is designed to interview 30 doctors who are treating thyroid patients and example cases of 30 anonymous thyroid patients. The information from thyroid patients and interviews will be used in this study.

3.6.1 Doctors' criteria:

Specialize in Anti-Aging medicine, and other doctors who are treating thyroid diseases: goiter, hyperthyroidism and hypothyroidism.

3.6.2 Patients' inclusion criteria:

3.6.2.1 Thyroid patients of any age

3.6.2.2 Any genders

3.6.2.3 Subject is taking supplements such as vitamin E, C and coconut oil.

3.6.3 Patient's exclusion criteria

patients who underwent thyroid surgery

3.6.4 Equipments:

3.6.4.1 Subjects: doctors and patients

3.6.4.2 Research documents such as books and reports

3.6.4.3 Questionnaires based from the information gathered in the literature researched

3.6.4.4 Recorder

3.6.5 Example questions for doctors:

3.6.5.1 How long have you been treating thyroid patients?

3.6.5.2 Which hospital are you in, public or private?

3.6.5.3 Can you give the breakdown in each category?

3.6.5.4 Do you believe in the benefit of supplements in thyroid patients?

3.6.6 Example questions for patients:

3.6.5.1 How long have you had the disease for?

3.6.6.1 What medications are you taking?

3.6.6.2 Are you taking any supplements? If so, which kind?

3.6.6.3 How long have you been taking the supplements for?

3.6.6.4 Are there any changes in you lifestyle after you were diagnosed with the disease?

3.7 Duration

June 2010-April 2011

3.8 Administrations and Time Schedule

Table 3.1 Time schedule

Activities	Jun 2010	July 2010	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011
Literature Review	←	—	—	→							
Study Design	←	—	→								
Research methodology			←	—	—	→					
Data collection					←	—	—	→			
Report							←	—	—	→	
Presentation											↔

3.9 Budget and Expenses

The Author provided all of the expenses.

Table 3.2 Expenses

Total Expenditure	**Amount**
List	**THB**
1. Remuneration	10,000
2. Research equipment and printing	25,000
3. Travel fee	10,000
Total	**45,000**

3.10 Expected Outcome

3.10.1 To overview the thyroid diseases and the supplements that can be use to support thyroid patients, the advantages/disadvantages, the necessity and popularity of the supplements.

3.10.2 To increased healthy options of food for the patients. This study will vary the options in improving health of thyroid patients.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Results

4.1.1 The results of the supplements usage data collected from the interview with doctors and some random thyroid patients, the results are shown in the figure 4.1

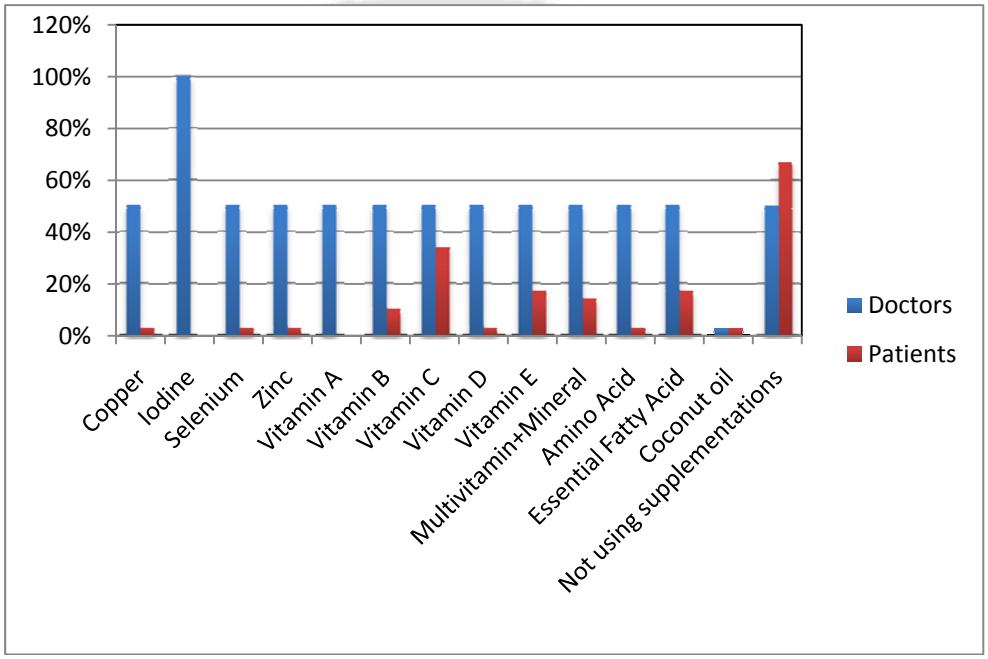

Figure 4.1 Result of the supplements usage by doctors and patients

4.1.2 Figure shows doctors' criteria

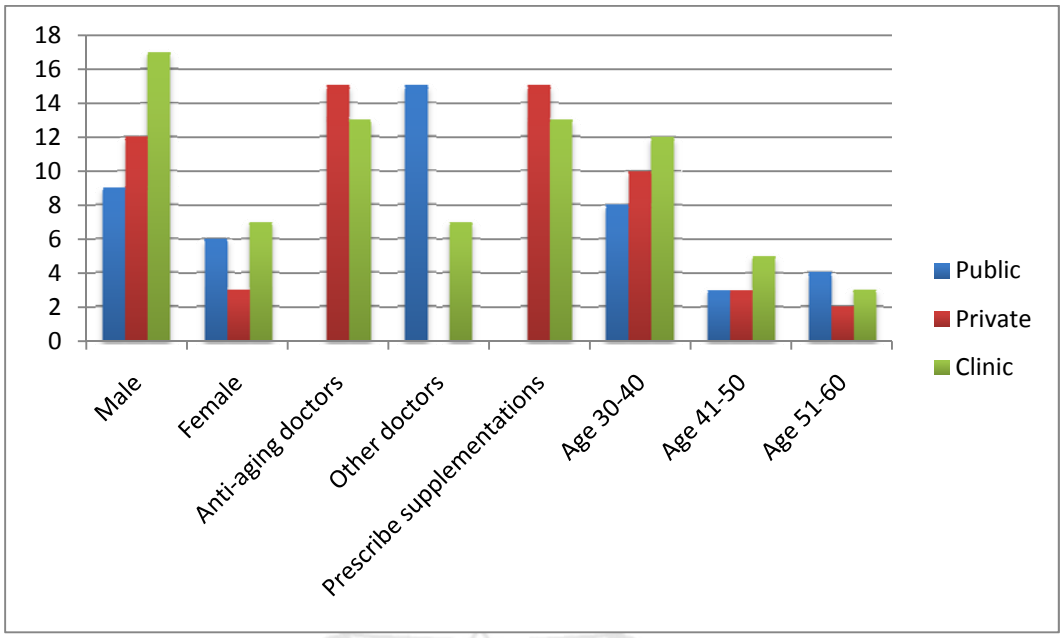

Figure 4.2 Doctors' criteria

4.1.3 Figure shows patients' criteria

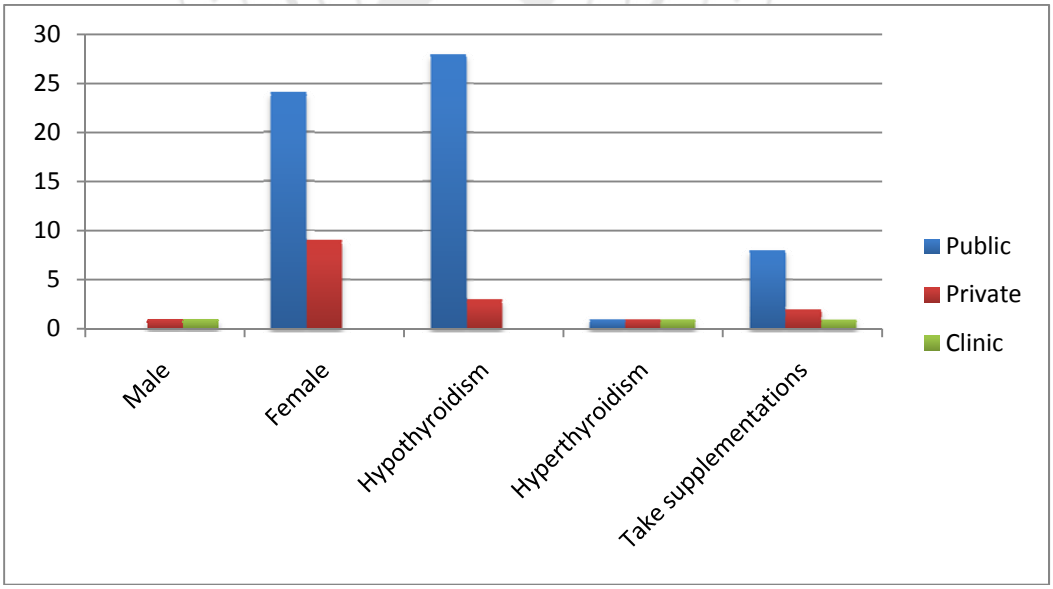

Figure 4.3 Patients' criteria

4.2 Discussion

Table 3 showed the supplement usage result, by doctors and some random thyroid patients.

All doctors prescribed Iodine, as it is also administered as the treatment for iodine deficiency hypothyroidism. None of the patients took Iodine supplement, probably because Iodine could be found in table salt used in cooking.

50% of the doctors, who prescribed supplements, mainly were from private hospital or clinic and all of them had studied in anti-aging medicine. Their reasons for using supplements were because they believed that supplements could help in improving and maintaining health of the thyroid patients. One doctor from private hospital mentioned that he prescribed the supplementations to increase the hospital sales.

One doctor prescribed coconut oil even though he mentioned that coconut oil was still a new subject in anti-aging medicine and needed further studies before he could prescribe the oil to patients with confidence. Six doctors did not use coconut oil because they considered that this oil was difficult for patients to take as supplements, as it came in liquid from, and still did not have enough evidence about the benefits of this oil. Three doctors did not use the coconut oil because they did not have information about the oil. One patient used to take coconut oil but quitted shortly after because of the taste of the liquid.

50% of the doctors did not prescribe any kind of supplement because they did not believe in the benefits of the supplements. Furthermore, they also mentioned that some supplements could be dangerous if taking too much. The supplementations could be too expensive, unnecessary and takes too long to get the satisfied results, as most of the patients could not afford both time and the supplementations. These doctors were from public hospitals.

Twenty patients did not use any kind of supplements; this because their conditions improved only by taking medication. Seventeen of them did not use any kind of supplementations because they do not have knowledge about the supplements and even if they do, they still cannot afford it. All of the patients were from public hospital.

Ten patients used supplements because they heard about it from their friends, doctors and sales person from the supermarket. Three of the patients are from private clinic and hospital.

From the results, it showed that the early prediction about supplementations had been confirmed. From the research only, it showed that supplementations might help to improve thyroid conditions. However, in real life, most of the doctors and patients do not use the supplements.

CHAPTER 5

CONCLUSION

5.1 Conclusion

This study's aim and purpose have been confirmed. As for doctors who prescribe supplements, they were from private hospital or clinic and all of them have studied anti-aging medicine. Their reasons for using supplements are because they believe that supplements can help to improve and maintain health of the thyroid patients. However, there are some doctors and patients who do not use any kind of supplements because they do not believe in the benefit of the supplementations as well as expense concern. Most of these doctors are from public hospitals.

5.2 Suggestion

5.2.1 This study is just a pilot study, which needs further investigation and larger scale of doctor and patient data.

5.2.2 This study is for information purposes only. The content is produced from peer review research. It cannot replace doctors or other qualified health professionals' diagnosis and suggestion.

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APPENDIXES

APPENDIX A

แบบบันทึกข้อมูลโครงการวิจัย A

ข้อมูลทั่วไปของแพทย์

1. วัน/เดือน/ปีที่เก็บข้อมูล……. Date
2. สถานที่……. Hospital
3. เบอร์ติดต่อ…..…….. Tel
4. เพศ ☐ชาย ☐หญิง Sex
5. โรคของคนไข้ที่รักษา ☐Goiter ☐Hyperthyroidism ☐Hypothyroidism
6. กลุ่มอายุของคนไข้ ☐20-30 ☐31-40 ☐41-50 ☐51-60
7. ยาที่ใช้ ☐Levothyroxine

…….

…….

8. อาหารเสริมที่ใช้ ☐Copper ☐Iodine ☐Selenium ☐Zinc ☐Vitamin A ☐Vitamin B ☐Vitamin C ☐Vitamin D ☐Vitamin E ☐ Multivitamins + Minerals ☐Amino acids ☐Coconut oil

เพิ่มเติม……

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9. ความคิดเห็นส่วนตัวเกี่ยวกับอาหารเสริม……..

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APPENDIX B

แบบบันทึกข้อมูลโครงการวิจัย B

ข้อมูลทั่วไปของคนไข้

1. วัน/เดือน/ปีที่เก็บข้อมูล……. Date
2. รักษาที่…….. Hospital
3. เบอร์ติดต่อ…..…….. Tel
4. เพศ ☐ชาย ☐หญิง Sex
5. อายุ……
6. อาชีพ…….
7. โรคที่รักษา ☐Goiter ☐Hyperthyroidism ☐Hypothyroidism
8. ระยะเวลาที่เป็นโรค……..
9. ระยะเวลาที่ได้รับการรักษา……..
11. ยาที่ใช้…….

……..

……..

12. อาหารเสริม ☐ใช้ (ไปข้อ 14) ☐ไม่ใช้ (ไปข้อ13)
13. ไม่ใช้อาหารเสริมเพราะ ☐ไม่มีข้อมูล ☐ราคาแพง
14. อาหารเสริมที่ใช้ ☐Copper ☐Iodine ☐Selenium
☐Zinc ☐Vitamin A ☐VitaminB
☐Vitamin C ☐Vitamin D ☐Vitamin E
☐ Multivitamins + Minerals
☐Amino acids ☐Coconut oil
☐อื่น ๆ……

15. ใช้อาหารเสริมมาเป็นเวลา……เดือน/ปี

16. ออกกำลัง ☐ไม่ออก ☐ออก/อาทิตย์ละ……..วัน

14. ความคิดเห็นส่วนตัวเกี่ยวกับอาหารเสริม……..

…….

…….

CURRICULUM VITAE

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