BACKGROUND
The thyroid gland produces hormones that have two primary functions: they enhance protein synthesis and oxygen utilization. These physiologic activities, in turn, influence the basal metabolic rate (BMR). The level of thyroid hormone production is determined by levels of thyroid stimulating hormone (TSH) released from the pituitary gland, by availability of iodine and tyrosine (converted by the gland to the thyroid hormones), and by the condition of the thyroid tissues themselves. TSH levels are further regulated by the hypothalamus, and no doubt by other regulatory mechanisms, producing a feedback loop so that TSH increases as thyroid hormones decrease and TSH decreases when thyroid hormones increase. Measures of the amount of the thyroid hormones T3 (triiodothyronine) and T4 (thyroxine) in the blood plasma are considered a substantive evaluation of thyroid function. Additional diagnostic factors can reveal the presence and nature of thyroid disease. The thyroid gland also produces calcitonin, which acts in conjunction with parathyroid hormone to regulate calcium levels; thyroid disease may affect this function.

Thyroid disease affects about 2.5% of the American population, but because the disease predominantly strikes middle-aged women, the incidence within this group is rather high. Women are about four times more likely than men to suffer hyperthyroid disorders, eight times more likely to suffer hypothyroidism, and about twice as likely as men to suffer thyroid tumors. Approximately half the cases of thyroid disease involve hyperthyroidism and the other half involve hypothyroidism. Despite the differing outcomes, the main cause of the disease as it occurs today is an autoimmune process. Grave's disease is the most common hyperthyroid condition; in severe cases it is treated by removal of thyroid tissue either through surgery in young individuals and in pregnant women, or via irradiation from an iodine isotope-this rapidly binds to the thyroid, and thus causes maximum destruction of tissues at this site. Thyroid-inhibiting drugs, such as methimazole, may be used in less severe cases. Hashimoto's thyroiditis is the most common autoimmune disorder that causes hypothyroidism. In its normal course, it begins with an episode of hyperthyroidism which spontaneously converts to hypothyroidism. It is treated mainly by giving oral thyroid hormone (thyroxine) as a replacement therapy, the same therapy given after thyroidectomy or irradiation of the thyroid gland for hyperthyroid patients.

Hyperthyroidism follows a course similar to many inflammatory autoimmune disorders, that is, with periods of flare-up and remission. Hypothyroidism, however, appears to follow a more steady course, and might thus be comparable to early-onset diabetes; the thyroid gland becomes enlarged or shrunken and has little or no function, just as the insulin-producing cells of the pancreas of the diabetic patients have little or no function.

It is important to note, however, that a different form of thyroid disease was the dominant one in earlier times: iodine-deficiency goiter. This disorder often produces a very large mass in the neck area. It has become less common in the United States as a result of the practice of adding iodine to the national salt supply and by the recommendations to consume more seafood. It is also relatively easy to diagnose and treat.
The current medical therapies for thyroid disorders other than iodine-deficiency goiter are often deemed inadequate because of difficulties in regulating the level of thyroid hormones through use of drugs or an exogenous source of thyroid hormone. As a result, patients often experience only partial relief of the symptoms and those who suffer from hyperthyroidism often have to deal with hypothyroid conditions following medical destruction of the thyroid gland.

Therefore, it is of interest to investigate the methods used by Chinese doctors. Thyroid disease is common in China, and it is frequently treated by herbal medicine or a combination of herbs and drugs. Positive response is a common outcome: the aggregate "cure" rate for hyperthyroidism reported in more than a dozen studies involving more than 700 patients is 42%, with most other patients well-managed even after cessation of the therapy. By "cure," it is meant that the primary hyperthyroid symptoms are removed and that the laboratory measures (such as \( T_3 \) and \( T_4 \) levels and iodine uptake) are in the normal range. Clearly, it is not meant that there is any change in the underlying genetic propensity for autoimmunity, nor is it suggested that the immunologic memory of the T-cells is altered. Rather, the initiating factors for autoimmune attack appear to be diminished and, as shown in two studies, circulating antibodies against thyroid tissue are reduced. Follow-up studies of patients claimed to be cured during these treatment programs indicates persistence of the favorable outcome.

**ORIENTAL MEDICAL APPROACH**

Until the past fifty years, thyroid disease could not be definitively diagnosed in China; rather, Chinese doctors could only detect a certain set of symptoms to be treated and could palpate any moderate or large nodules in the area of the thyroid gland. Now, objective measures, such as altered levels of thyroid hormone, can give a clue as to the site of the disease and can further elucidate the influence of various therapeutic measures that might be applied.

While treatments for both hyperthyroidism and hypothyroidism have been reported in the literature, the main thrust of clinical trials has been with hyperthyroidism. The treatments vary somewhat from one study to the next, but there are certain consistent features which will be described here on the basis of reports for hyperthyroid treatments only.

First, there is a strong reliance on materials from the sea, mainly oyster shell (included in 12 of 18 clinical trials using a basic formula), seaweeds (laminaria, and sargassum, used in nearly half the clinical trials), and somewhat less frequent use of clam shells, arca shells, or pumice. While these materials, especially the seaweeds, would obviously be helpful for iodine-deficiency goiter, they are now often used for Grave’s disease and thyroid adenoma. Iodine is not known to have an impact on chronic (autoimmune-based) thyroid disease, though it is employed as a temporary remedy in cases of thyroid storm (physiologic crisis resulting from thyroid hormone excess). The continued use of the sea materials may be unnecessary for modern thyroid diseases, and, indeed, two studies [2,21] producing satisfactory results in treatment of hyperthyroidism contain none of these materials. However, the sea materials may contain components other than iodine that benefit patients with hyperthyroidism. Their initial use was no doubt associated both with the experiential knowledge that consumption of sea materials resolved many cases of goiter and also by the theoretical concept that salty materials would soften and remove masses. Thyroid nodules often occur even in cases of non-iodine-deficiency hyperthyroidism.

The two trials reported in the Chinese literature that failed to include sea materials in the herb combination had unusually long treatment times (six months to one year for most patients of one study, and one and a half years for the patients in the other study) compared to trials that included sea materials. In the recent book *Practical Traditional Chinese Medicine and Pharmacology Clinical Experiences*, formulas are presented for treatment of hyperthyroidism according to differential
diagnosis: all five of the listed formulas contained seaweeds or seashells or both. Thus, current thinking about hyperthyroidism emphasizes these materials. Oyster shell and other shells not only resolve masses, but also help to calm liver wind, thought to be responsible for some hyperthyroid symptoms, such as trembling, and they astringe excessive perspiration, another common symptom.

Several other phlegm-resolving agents are used to remove the thyroid mass, such as pinellia, fritillaria (zhebeimu), sinapis, huangyaozi (Dioscorea bulbifera), and various types of citrus (e.g., chenpi, juhong, and zhiquiao). Masses and nodules are often described by Chinese doctors in terms of entangled qi, accumulated phlegm, and static blood. Because of the site of the nodules (just over the lungs), the fact that the nodules are usually not painful, and the soft quality of the swellings (except in cases of thyroid tumor), they are traditionally described as being primarily phlegm masses. Both the sea materials and the items mentioned here from land plants are thought to effectively treat such masses. Fritillaria, used also in the treatment of a wide variety of tumors, is the most commonly selected phlegm-resolving item for hyperthyroidism aside from oyster shell. In addition, many of the therapies for hyperthyroidism contain prunella, an herb used to resolve entangled qi. The citrus likewise help resolve qi stagnation and phlegm accumulation, and bupleurum and/or cyperus are sometimes included in the treatments for regulating the qi.

A few doctors include therapeutic substances for static blood in formulas aimed at removing thyroid nodules. The main herbs used are zedoaria and sparganium; these would also be relied upon for treatment of abdominal masses, such as uterine myoma. Salvia, cnidium, and/or peony (white peony)-less powerful blood-vitalizing agents-are sometimes used instead of, or in addition to these two principal herbs. Blood-vitalizing herbs are especially indicated when the thyroid mass is quite firm; this is a characteristic of thyroid tumors which can also cause hyperthyroidism (toxic adenoma).

Hyperthyroidism is thought by some doctors to start with an excess fire syndrome which later becomes yin-deficiency fire. Therefore, fire-purging herbs are used, especially in the early stages of the disease process. Prunella is the most frequently selected one, used in more than half the clinical trials that rely on a basic formula. Peony, raw rehmannia, and scrophularia are also commonly used. Other fire purging herbs recommended include moutan, gentiana, gypsum, scute, anemarrhena, and gardenia.

Several hyperthyroid symptoms, such as heart palpitation, general hyperactivity (psychological and physical), excessive perspiration, heightened appetite, aversion to heat, and, in more severe cases, wasting of the muscles, are characteristic of a yin deficiency syndrome. Therefore, Chinese doctors prescribe raw rehmannia and scrophularia (herbs that purge fire and nourish yin) plus ophiopogon and/or adenophora. In some cases, lycium fruit and/or tang-kuei may be used in conjunction with one or more of these other agents to nourish liver blood and thereby control liver fire. To calm the agitation, sedative herbs such as zizyphus, succinum, dragon bone (or dragon teeth), and polygonum stem are used. Magnetite or hematite may be added as sedatives and to treat exophthalmos. Tribulus is used as an antispasmodic that is beneficial to the eyes; it may be combined with lycium fruit to nourish the liver. Cinnabar is employed by some Chinese doctors as a sedative but is not recommended for use by Western practitioners.

Many doctors prescribe some spleen qi tonics to normalize overall body functions and to avoid generation of phlegm from spleen dampness. Astragalus, codonopsis, atractylodes, hoelen, and licorice are the materials most often used. Astragalus is the preferred item, though it is often selected, as are the other qi tonics, as an optional ingredient rather than a standard item, to be used for those patients showing obvious signs of qi deficiency. Typically, hyperthyroid formulas contain only one or two qi tonic herbs which do not constitute the bulk of the formula.
A typical treatment, with a formula somewhat larger than others, but comprised of the commonly used components is *Jia Kang Wan* [7]. It contains oyster shell, sargassum, laminaria, prunella, citrus (*juhong*), pinellia, fritillaria, and *huangyaozi*-ingredients for resolving nodules; it also contains succinum and cinnabar as sedatives, and hoelen and licorice to benefit the spleen. The herbs are powdered, formed into large honey pills weighing 15 grams, and taken in the dosage of one pill twice daily for 45 to 90 days. It was reported that 65 of 125 patients so treated were cured, a rather high rate (52%).

Another typical example is *Pingyin Fufang* [16], which contains oyster shell, arca shell, prunella, fritillaria, blue citrus, sparganium, and zedoaria to resolve the thyroid nodules; scrophularia, raw rehmannia, peony, and moutan to clear heat and nourish yin; plus tang-kuei, dragon bone, hoelen, and cornus. The herbs were decocted "in typical amounts" (the total dosage is 150 grams or more of crude herb per day) and given for a cycle of 30 days, which might be repeated once or twice if necessary to obtain adequate response. The cure rate was 38 of 110 patients (35%), somewhat low compared to the overall outcome of the various clinical trials, but because of the short treatment time (usually just 30 days), the results are impressive.

A Japanese doctor, relying on approved herb formulas (those sanctioned by the Health Ministry of Japan) reported good response of hyperthyroidism in several patients from Bupleurum and Dragon Bone Combination and from Baked Licorice Combination [25]. The former contains herbs found in many of the modern hyperthyroid treatments, such as oyster shell, dragon bone, pinellia, bupleurum, and hoelen, while the latter also contains some ingredients in common with the modern therapies, including raw rehmannia, ophiopogon, and licorice. Other treatments mentioned by Japanese doctors are described later in the section on Kanpo medicine.

In sum, Chinese doctors obtain clinically useful results from the application of formulas that have the primary function of resolving masses, with additional herbs to clear heat and nourish yin.

**CAUSES FROM THE ORIENTAL PERSPECTIVE**

While Western doctors seek a cause of autoimmune-induced thyroid disease in a combination of genetic determinants and viral initiators, Chinese doctors have attributed the cause of the disorder primarily to emotional disturbance. In the case of hyperthyroidism, the following have been mentioned in the Chinese literature [24]:

1. Disturbance of qi by sorrow and anger. Liver and spleen qi become disharmonious, and, as a result, moist sputum coagulates to form a goiter. The swelling in the neck should be one of the first noted symptoms when this is the primary cause.

2. Heart fire. The disorder is often marked by highly agitated emotional condition. Fright, dreaminess, mania, panic, and other distress that may cause insomnia, excessive talking, or heart palpitations belong to this category. Heart fire is often associated with heart yin deficiency. The skin in the area of the thyroid may become discolored (purple).

3. Extreme anger may produce liver fire, which dries yin and blood. The vessels surrounding the thyroid may bulge.

4. External factors: geography plays a part (iodine deficiency, goiterogenic foods dominant in local crops, or some toxin in the environment induces thyroid disease). Drinking "sandy water" or being exposed to "mountain vapor" have been said to cause the disease, but such explanations are no longer relied on.

The first cause, qi disturbance, is most frequently cited. A weakening of the stomach and spleen qi (which may be the result of emotional factors or dietary influences) produces turbid and moist
substances; these are raised to the thyroid area by the stimulus of excessive liver qi (most often the result of emotional stimulus). There will thus be swelling in the neck and protrusion of the eyes. Or, to put events in a different order, as described in Comprehensive Guide to Chinese Herbal Medicine:

When [hyperthyroidism is] due to long-term depression or sudden psychic trauma, the liver no longer properly regulates the flow of vital energy and blood, liver qi stagnates, and fails to transport fluids. The fluids accumulate and transform into phlegm which then obstructs the neck with qi and gradually induces goiter. Lingering [pathologic] liver qi transforms into fire, which is manifested in fidgeting and irritability. If the fire consumes body fluids and stomach yin, the resulting yin deficiency produces heat. Even though this heat overstimulates the appetite, the patient still loses weight. If the spleen is impaired, it will be unable to transport or transform nutrients, thereby giving rise to diarrhea, gauntness, and lassitude. If heart yin is deficient [a result of lack of transported nutrients], palpitation or severe palpitation with fear, fidgeting, insomnia, and profuse sweating can be observed....

In the discussion of a clinical trial involving 98 patients [21], the authors present the following explanation:

The etiology of hyperthyroidism involves chiefly the deficiency of genuine qi and insufficiency of kidney fluid. Insufficiency of water leads to excessive heat, which in turn harms the vital energy. Excessive heat also hurts yin, and impairment of yin again affects yang. The excessive heat of the hyperthyroid patient often involves the three internal organs of heart, liver, and stomach. Excessive heat in the heart is manifested by palpitations and forgetfulness. Excessive heat in the liver gives rise to irritability and tremor. Excessive heat in the stomach leads to polyphagia. The impairment of yin that affects yang in the hyperthyroid patient is represented by the damage of spleen yang. Deficiency of spleen yang causes indigestion and loose stool, and produces wet phlegm, which goes up to the neck to cause the enlarged thyroid or nodules, or goes to the eyes to induce exophthalmos. In treatment of this disease, main emphasis should be on replenishment of vital energy. Once the yang of vital energy is replenished, yin will grow to calm down the excessive heat.

An initial problem of deficiency is also described by another experienced doctor [31]. According to his observation of patients with hyperthyroidism, yin deficiency of the liver and kidney is a dominant cause of the disease, though it is sometimes caused by yin deficiency of the heart and kidney or deficiency of qi and yin. The yin deficiency can lead to a coexisting yang deficiency. He therefore recommends nourishing the kidney, removing heat from the liver, softening the thyroid mass, and (if necessary) restoring the qi and yang.

From these explanations (see also the explanation given under the section on acupuncture therapy), it should be evident that there is not complete agreement on the initiation of the disease. There is general agreement, however, that ultimately the yin is damaged and must be replenished and that the thyroid swelling, due to a phlegm excess, must be resolved.

In one clinical report on hyperthyroidism [16], investigators determined that the likely causative factors for the 110 patients were: fright, depression, and mental irritability in 84 cases (76.3%), infections in 12 cases, extreme fatigue in 9 cases, and congenital problems in 6 cases. The 26 remaining cases were of undetermined causality. The main cause-emotional distress-has an effect of disturbing the qi.
SINGLE-HERB REMEDIES

Single-herb remedies for hyperthyroidism do not follow the rules of traditional Chinese herb prescribing in addressing the underlying or symptomatic problems. There are three examples mentioned in clinical trials or individual case reports.

The immunosuppressive herb tripterygium (shanhaiteng), which has effects comparable to corticosteroids, was used in at least one study of hyperthyroidism [1]. When used alone or with the Western drug tapazole (methimazole), virtually all patients were said to have their symptoms remitted. Interestingly, corticosteroid therapy is not a common method of treatment in the U.S. Tripterygium is considered, by Chinese doctors, to be somewhat safer and more effective than corticosteroids, but because of its potential toxicity even in small doses, the herb is not imported into the U.S. and is not available for use by Western practitioners. Chinese doctors use it for a wide range of autoimmune diseases, especially rheumatoid arthritis (the variety leigongteng is used).

Fagopyrum (suanqiaomai), was used in another study [3]. The whole plant (rather than the fruits typically used in Chinese medicine) was combined only with a small amount of poultry trachea (0.5%), decocted and made into tablets. With two grams of herb extract in each tablet, they were taken in the amount of 15-16 tablets daily (thus about 30 grams of crude herb equivalent) for 45 to 60 days. This method was claimed to cure 41 of 90 patients (45%)-a rate comparable to that obtained with the complex formulas; another 44 patients had some degree of improvement. Fagopyrum is in the same plant family (Polygonaceae) as polygonum stem, used to treat agitation caused by hyperthyroidism. The plant contains glycosides and flavonoids, but the mechanism of action for hyperthyroidism has not been determined. According to the clinical report, in using this remedy during a three year period, the doctors found it safe and reliable. No toxicity was revealed upon examination of liver function, potassium and sodium levels, and blood sugar.

The herb huangyaozi is a common ingredient in formulas for hyperthyroidism and it has been used in individual cases as a sole ingredient. In Practical Traditional Chinese Medicine and Pharmacology Clinical Experiences, a method of using the herb is described: the rhizome is crushed into small pieces and soaked in wine (300 grams rhizome per 1500 ml wine), put into a sealed jar, and heated over a very low fire for four hours, then stored in ice water for one week. The patient is then instructed to drink 10 ml of the liquor six times daily, but not before bed (total daily dose equal to about 12 grams huangyaozi). This is indicated in the book as applicable to thyroid adenoma. This herb, like other Dioscorea species, is rich in steroidal compounds. However, it also contains diosbulbins (diterpene lactones) which may have an influence on the thyroid adenoma. An herb with similar lactones, brucea, is used in cancer therapy. Huangyaozi must be used with some caution, however, as it has been reported to cause toxic hepatitis when used in large amounts. Ingestion of decoctions containing 15-21 grams for 30 days or 12-15 grams for 45 days were reported to be sufficient to cause toxic hepatitis, with some symptoms appearing in as little as two weeks [39]. At 30 grams daily, 7 days of administration could cause toxic hepatitis. Therefore, the dose of this herb should not exceed 12 grams per day and liver enzymes should be checked monthly if prolonged therapy that includes this herb is undertaken.

**DOSAGE AND DURATION OF TREATMENT-COMPLEX FORMULAS**

For purposes of analysis, nine studies which each involved a minimum of 50 patients were analyzed to determine the influence of method of administration, dosage, and duration of treatment.

Four studies used decoctions only. In a 1986 study using Yiqiyangyin decoction [21], treatment time was six months to one year for most of the patients (treatment is terminated when the patients are obviously cured or when it is obviously not helping); however, 12 of the 98 patients were treated for up to three years. A high dosage decoction, with about 150 grams/day, was used. The claimed cure...
rate was 62%. In another study [4], with a dosage of about 120 grams per day in decoction, treatment time was one of five months and the claimed cure rate was 42%. Another report [16] described a decoction with a dosage of about 180 grams per day used for one to four months; it yielded a claimed effective rate of 34.5%. A heavily modified Bupleurum and Dragon Bone Combination, taken once daily in decoction form with 215 grams/day, produced marked improvement in 50% of the patients with one to three months of therapy, but no claim of cures.

One study used either decoctions or dried decoction in tablet form [5]. The decoction had a dose of 90 grams per day, taken one time per day and the tablets had a similar dose (after concentration), but were taken in a divided dose three times per day. The cure rate was rather low (12.1%) with three months treatment time, though the rate of "marked improvement" was substantial at 38%.

Two studies used a mix of decoctions and powdered herbs. In one [6], the decoction was always given first, with a dosage of about 110 grams/day, administered until the disease improved somewhat, but then followed-up by powdering the herbs and taking them as pills (18 grams per day). The treatment time was not clearly stated, but appeared to be three months or more, with a cure rate of 47%. In the other [13], herbs were either given as a decoction (about 100 grams/day) or made into a powder and consumed with warm water. The treatment time was three to six months and the claimed cure rate was 20%. No distinction was made in the reported outcome between the two methods of herb preparation.

Two studies used powdered herbs only, in pill form. In a study cited earlier [7], two large pills were taken daily for 45-90 days, and the cure rate was 52%. Given the short duration of therapy, the cure rate is remarkably high. Also, the amount of herb materials used, about 30 grams per day (includes binder of 30-50% by weight) was far lower that the amounts used for decoctions. In the other [10], patients received 10 grams of herbs per pill (probably includes binder weight), two to three pills per day. The duration of therapy was not stated; a cure was indicated for only 16% of the patients, though the rates for marked improvement were substantial (36%).

In these nine studies, the treatment times varied from one month to more than one year, but the typical treatment time was about three months (a review of the Chinese literature reveals that this duration is common for treatment of chronic ailments involving autoimmunity). The treatments were administered mainly as decoctions or large pills or both (not at the same time, however). The decoctions had a range of 90-210 grams/day of dosage, with a highly variable cure rate, from zero to over 60%. The pills had a dosage range of 18-30 grams/day. Two of the studies that utilized pills (made from powdered herbs, combined with honey, and then chewed and swallowed) one initiated with decoctions and using pills for the remainder—had relatively high success rates (around 50% cure) with moderate duration of treatment (about three months). In the third study using pills with a cure rate of only 16%, the criteria for participation by most of the patients was a long duration of the disease with failure of Western drugs to control it.

On the basis of this small sampling, it would seem reasonable to use powdered herbs prepared in a convenient form in a dosage of about 20 grams per day for a period of three months. This would conserve resources (using about 15% as much herb material as in a decoction), maximize convenience (no cooking of the herbs or drinking a strong tasting tea on a daily basis), and provide a reasonable trial time. As an example, using easy-to-swallow tableted herbs (700 mg herb/tablet), the dosage recommended in the studies would correspond to the use of 9-10 tablets each time, three times daily. Using instead bulk powdered herbs swallowed by the spoonful with water, this would correspond to about a tablespoon of powder twice daily.

However, in order to be able to vary the formulation according to individual needs, the use of decoctions or dried single herb extracts may be indicated for part or all of the treatment. In such cases,
about 6 to 15 grams of each ingredient (crude herb) with 10-15 ingredients per formula is made in
decocction form, often divided into two doses per day, and administered as needed. About 18 to 27
grams of dried extracts, taken in two or three divided doses, would be expected to provide comparable
effects.

It should be noted that when consuming herb powders or pills, astragalus or ho-shou-wu may
cause digestive problems for some individuals at the higher dosage levels. This is because astragalus
contains large amounts of polysaccharides and ho-shou-wu contains emodin glycosides. If problems
were to occur, they would likely be gas and abdominal bloating and mushy or loose stool. When
consuming herbs in decocction form, the sea materials and the bitter fire-purging herbs may cause
nausea or vomiting in some sensitive individuals. Also, hyperthyroid patients should allow the herb
tea to cool somewhat before consuming it. An experienced physician, reporting in the book
_Treatment of Knotty Diseases_, has cautioned that herbs should be administered in small portions at
frequent intervals rather than single large doses. In most of the studies, two dosages per day were
suggested, but a three-times-per-day schedule would not be inconvenient with tablets or dried
extracts.

**FORMULA MODIFICATION FOR HYPERTHYROIDISM**

Relatively rapid relief of symptoms, within the first 30 to 90 days of treatment, is observed in most
patients consuming Chinese herb formulas. While essentially complete remission is indicated in just
under half of the patients, alleviation of the majority of symptoms occurs in most of the remaining
patients. In order to obtain such high rates of symptom relief, basic herb formulas may be modified by
adding one or more ingredients to address specific symptoms or symptom complexes. Below are
some examples obtained from examination of the literature. If an ingredient to be added is already
present in the base formula, then the dosage may be increased. Not all items in any list of additions
need be included. When two symptoms occur together, one or more of the ingredients indicated for
each of the symptoms may be added to the base formula.

**Symptoms**

**Exophthalmos:** celosia seed, chrysanthemum, and plantago; or vitex, leonurus fruit, and cassia; or
prunella, dandelion, chrysanthemum, lycium fruit, celosia, and tribulus; or magnetite, lycium fruit,
lycium bark, and tribulus

**Heart Palpitations and Insomnia:** polygonum stem, hematite, zizyphus, mother of pearl

**Palpitations Alone:** dragon teeth, succinum, and polygala

**Tachycardia:** zizyphus and dragon bone or dragon teeth; may also add sophora

**Insomnia Only:** dragon teeth and oyster shell or zizyphus, albizzia flower, and campsis

**Goiter:** cremastra and oyster shell or add fritillaria, prunella, and huangyaozi

**Persistent Goiter:** smilax, pleione, oyster shell, fritillaria, turtle shell, sparganium, and ant eater scale

**Sore Throat, Fever:** lily, lonicera, polygonum (yuzhu), rehmannia, raw, and scrophularia

**Thirst:** gypsum, anemarrhena, and trichosanthes root (remove pinellia if present)

**Liver Swelling, Jaundice:** curcuma, salvia, turtle shell, capillaris, alisma, gardenia, polyporus

**Depression:** bupleurum, peony, and uncaria; or bupleurum, curcuma, and fushou

**Excessive Appetite:** gypsum and anemarrhena

**Hand Tremor:** antelope horn, tang-kuei, chaenomeles, and scorpion.
Syndromes

Liver Fire: gentiana, prunella, and uncaria or gentiana and rehmannia, raw, or gentiana and gardenia

Qi Deficiency: codonopsis, astragalus, atractylodes

Qi/Yin Deficiency: astragalus and pseudostellaria

Qi/Blood Deficiency: codonopsis, atractylodes, polygonatum, dioscorea, astragalus, millettia, and lycium

Qi Stagnation: cyperus, chih-ko, and curcuma

Qi Stagnation With Excess Phlegm: clam shell and prunella

Spleen Deficiency: codonopsis, dioscorea, and alisma, remove yin tonics

Phlegm Excess: arisaema and perilla stem, or fritillaria and citrus

Liver/Kidney Yin Deficiency: anemarrhena and phellodendron

Yin Deficiency, With Fire: rehmannia, raw, adenophora, ophiopogon, and turtle shell

Blood Stasis: zedoaria and sparganium, or peony, salvia, and persica

Heart Fire: coptis

Accompanying Diseases

Diabetes: trichosanthes root, anemarrhena, gypsum, pueraria, raw rehmannia, and dioscorea

Sjogren's Syndrome: ophiopogon, adenophora, trichosanthes root, linum, gelatin

Dr. Zelin Chen points out that for exophthalmos, a treatment superior to using the eye-benefiting herbs mentioned above would be to remove dampness and phlegm that congests the eyes, using Hoelen Five Herb Formula minus cinnamon twig or Hoelen and Areca Combination [40]. In a clinical report [2], the physicians commented that immunosuppressive agents were always necessary in the treatment of cases involving exophthalmos.

HYPOTHYROIDISM

The treatment of hypothyroidism is infrequently mentioned in Chinese literature and is not a common subject of clinical studies. This may result from a less frequent diagnosis of the disorder, since the fatigue, water retention, and chills characteristic of hypothyroidism are standard symptoms belonging to traditional categories such as qi and yang deficiency. These conditions usually do not present immediate need for Western medical attention as might occur with the irregular heart rate of hyperthyroidism. The relatively infrequent reporting may also result from a lower incidence of the disease in China.

Patients with Hashimoto's thyroiditis have reduced responsiveness to TSH. The disease can spontaneously remit, and this change can be detected, even while thyroxine replacement therapy continues, by testing for TSH responsiveness. In one evaluation [29], about 24% of patients were seen to experience spontaneous remission, though no remissions were found among patients with diffuse goiter.

The basic herbal treatment for hypothyroidism is to administer qi and yang tonics. For example [32], 19 cases of hypothyroidism of various causes (10 due to thyroid operation or irradiation in the treatment of hyperthyroidism, 3 were chronic lymphatic thyroiditis, 6 due to unknown causes) were treated for two to four months with a thyroid tablet containing codonopsis and astragalus to tonify qi, and epimedium, curculigo, and cuscuta to tonify yang (with cooked rehmannia to balance the yin and yang). The patients received either herbs alone or herbs with thyroxine. A control group received...
thyroxine alone. The Chinese herbs improved clinical symptoms, reduced cholesterol and thyroid-stimulating hormone levels, and increased T3 and T4. The addition of thyroxine (at 60 mg/day) gave even better results. A similar prescription, adding psoralea in the standard formula, and aconite and cinnamon twig for more severe cases, was given to seven patients with hypothyroidism, and it was claimed that all patients showed improvement with two to three months treatment [14]. Five of the patients took a small dosage of thyroxine.

In a study [22] of 22 patients with hypothyroidism, 19 of the cases were caused by thyroid treatments (radioactive iodine, surgery, antithyroid drugs). A decoction of aconite, cinnamon bark, ginseng, astragalus, lycium fruit, epimedium, deer antler, psoralea, morinda, salvia, atractylodes, and hoelen was given. Thyroxine tablets were also provided as needed during the treatment period. After two months of therapy, of the 22 patients, 17 had their clinical symptoms eliminated, and the T3, T4, and TSH returned to normal levels, while the other 5 patients showed partial improvement in both symptoms and laboratory values. In one patient cured by this treatment, a follow-up visit after five years showed that she remained healthy.

Five patients with lymphatic thyroiditis were treated [50] with a combination of astragalus and codonopsis (30 grams each) to tonify qi, aconite, cinnamon bark, curculigo, and epimedium (9 to 12 grams each) to tonify yang, and lycium fruit plus coix. The decoction of herbs, modified as necessary to treat symptoms such as indigestion with diarrhea or constipation, was taken in two divided doses daily for two to three months. The mean body weight of the patients declined from 63 kg to 60 kg, the heart rate increased from 66 to 75 per minute, and cholesterol dropped from 260 to 202. T3 and T4 values increased markedly, while TSH declined.

Six patients treated with a high dose decoction of licorice (10 grams) and ginseng (8 grams, reduced to 6 grams after the first month) for three months, using thyroxine in reducing amounts from the beginning to the end of the treatment program, showed good results [28]. Four patients had basal metabolic rate, T3, and T4 return to normal or near normal values and improved symptoms which persisted after the treatment ended; two others improved while on the herbs but within one year of stopping the therapy the symptoms returned and could be controlled by using the decoction again.

As reported in Recent Advances in Chinese Herbal Drugs, an evaluation of patients with kidney yang deficiency syndrome who were not classified as suffering from hypothyroidism but were rather suffering from chronic bronchitis revealed a decreased level of T3 and T4 (average values of 102 and 8.2 respectively). Both chronic bronchitis patients not having kidney yang deficiency and normal adults had comparable levels of these hormones (147 and 9.3 respectively). When the kidney yang deficiency patients were treated for five months using a kidney tonic prescription (ingredients not specified), T3 levels increased (average 164; slightly higher than normal). Thus, kidney yang deficiency may be directly associated with hypothalamus-pituitary-thyroid function which is affected by corrective herbal therapies.

In contrast to the hyperthyroid treatments, herbs for dispersing phlegm and resolving masses are generally not included for hypothyroid cases, and instead the focus is on tonification therapy. A somewhat different approach has been used in two studies, in which tonics are still an important aspect of the treatment but qi and blood regulating herbs are also used. This method was applied in the treatment of 133 patients with Hashimoto's thyroiditis [34]. A combination of cyperus, saussurea, cnidium, curcuma, and bupleurum was modified by adding one of two tonic prescriptions: polygonatum, dioscorea, moutan, hoelen, and lycium for qi and blood deficiency patients and Rehmamniah Eight Formula for yang deficiency patients. By taking the powdered herbs in pill form for one to five months, 29% were cured. In another study [51], 38 patients with Hashimoto's thyroiditis were treated with codonopsis (or ginseng), plus pinellia, hoelen, and licorice to tonify qi and

http://www.itmonline.org/arts/thyroid.htm  29/09/2011
normalize the digestion, and citrus, blue citrus, salvia, and red peony to regulate qi and blood. Patients still showing hyperthyroid symptoms were additionally given the yin nourishing combination of asparagus, ophiopogon, rehmannia, and schizandra, while those showing hypothyroid symptoms were given the yang tonifying combination of cinnamon twig, deer antler, and epimedium. In the event that a thyroid nodules existed (4 cases), sparganium and zedoaria would be given. A control group with 20 patients were treated with standard thyroid drugs. Treatment time was six months. Among the group treated with Chinese herbs, 55% of those with hyperthyroid conditions and 93% of those with hypothyroid conditions had normal thyroid levels following treatment. There was no significant difference between this outcome and the results of using Western medicine in the control group.

It is not evident from these two studies that the addition of qi and blood regulating herbs enhanced the outcome of treatment compared to relying primarily on qi and yang tonic herbs alone. Among the several studies of hypothyroid treatment, it does appear that longer treatment times produce better effects.

LONG-TERM FOLLOW-UP
A one year follow-up to a study of Jiakangling administered for three months, either alone or with Western medication (thiamazole or propranolol) revealed that 85.2% of those treated with herbs only and 90% of those treated with herbs and drugs maintained the improvements that had been attained during the treatment period [5]. In a study of senile hyperthyroidism, a typical case was presented in which 30 days of decoction was consumed and a follow-up visit one year later showed no recurrence [19]. In 45 cases of hyperthyroidism said to be cured by an astragalus-based formula (Yiqiyanqingyin Tang) that were followed up, recurrence was noted in only two cases [21]. Follow-up duration was from less than six months to four years (12 cases under six months and 33 cases from six months to four years).

In the study of herb treatments for hyperthyroidism in which exophthalmos was a symptom, a follow-up four years later showed no recurrence of the initial condition [12]. Forty cases of hyperthyroidism treated with herbs for an average of 67 days yielded 24 cures and the remaining 16 either markedly improved or somewhat improved. One year later, the therapeutic benefits remained stable [35].

Individual cases mentioned in the reports describing various treatments for hyperthyroid or hypothyroid conditions suggested that one to five year follow-up demonstrated continued relief, but that a few individuals might experience a relapse which could be treated effectively by applying again the original treatment. From those studies involving longer-term treatment at the outset, it was evident that symptom improvement might be attained early, but continued administration of herbs was essential to further improve or maintain that effect.

THYROID TUMOR
The most common thyroid tumor is thyroid adenoma. It occurs somewhat more frequently in women than men, manifests as a "rock hard" lump or group of lumps on the thyroid, and either leaves thyroid function unaffected or generates a hyperthyroid condition because of the excess growth of thyroid tissue (called toxic adenoma).

Thyroid tumors, like other types of tumors treated by Chinese doctors, are addressed with a wide range of herb formulas. Some examples cited in the Chinese literature published during 1981 to 1986 (formulas cited in An Illustrated Guide to Antineoplastic Chinese Herbal Medicine) are given below.
Luffa Decoction: luffa (30 grams), prunella (30 grams), licorice (10 grams). [An abstract of the research article was also published in Abstracts of Chinese Medicine]. This formula was given to 30 patients with thyroid adenoma, in the form of decoction, in two divided doses daily for two to three months. It was claimed that 70% were cured, 20% improved, and 10% failed to respond.

Xiao Ying Tang: prunella (12 g), laminaria and sargassum (12 grams each), sparganium (12 grams), pumice (20 grams), tang-kuei (10 g), peony (10 g), fritillaria (10 g), and bupleurum (10 grams).

Huangyaozi Decoction: huangyaozi (15 g), sargassum (12 g), laminaria (20 g), fritillaria (10 g), prunella (10 g), oyster shell (30 g), pumice (30 g), citrus (6 g), and blue citrus (6 g).

Thyroid Tumor Formula: oyster shell (30 g), prunella (20 g), polygonum stem (20 g), adenophora (20 g), acorus (15 g), curcuma (15 g), bupleurum (10 g), sparganium (10 g), and zedoaria (10 g)

Jia Liu Wan: prunella (30 g), tang-kuei (30 g), mother of pearl (30 g), oyster shell (30 g), laminaria (15 g), and salvia (15 g). Mixed as powder, made into pills and consumed 9 grams twice daily. For benign nodular goiter.

With the exception of Luffa Decoction, the above formulas do not differ in any significant way from the formulas used to treat hyperthyroidism, though herbs for treating the secondary effects of hyperthyroidism (e.g., insomnia, heart palpitations) are generally not present when treating the adenomas. Herbs for resolving a "phlegm mass" dominate. Sea materials are present in nearly every one, and prunella is a major ingredient in every prescription. Information about the effectiveness of the above formulas was not immediately available except for that of the Luffa Decoction, for which a high level of cure was claimed. It should be noted that both decoctions (70-150 grams/day) and powders made into pills (18 grams per day) were used for the purpose of treating thyroid tumors.

A large number of additional formulas of similar nature, prepared in decoction and powder form, are presented in Treating Cancer with Chinese Herbs. Some examples are:

Bao Jin San: pig or sheep thyroid glands (10 pairs), sargassum (60 g), laminaria (60 g), clove (6 g), succinum (6 g), saussurea (6 g), musk (3 g), pearl powder (15 g). The ingredients are dried, powdered, and taken in the dose of 1.5 g each time, twice daily.

Wu Ying Fang: laminaria (30 g), sargassum (60 g), venus shells (60 g), pinellia (9 g), usnea (9 g), rice paper (9 g), amelopsis (9 g), asarum (3 g), cucumeroides (3 g), gentiana (3 g), made into decoction.

Unnamed Formula: prunella (30 g), huangyaozi (12 g), sargassum (12 g), laminaria (12 g), scrophularia (12 g), earthworm (12 g), and fritillaria (9 g). Taken as a decoction.

Unnamed Formula 2: equal amounts of sargassum, sea univalve, venus shells, cuttlebone, laminaria, gentiana, and aristolochia root. Grind into powder, make pills. Daily dosage is 9 g.

Ying Jie San: fried wheat (1.2 g), usnea (3 g), pinellia (3 g), fritillaria (3 g), sargassum (3 g), gentiana (3 g), venus shells (3 g), rice paper (3 g), laminaria (3 g), and alum (3 g). Grind to powder, take 3 grams each time, 3 times daily with wine.

Like the previously listed prescriptions, these all contain sea materials, and the formulas are made either as high dosage decoctions or pills (in this case, the dosage of the pills is smaller). However, prunella is an ingredient in only one of the five prescriptions, and it is also absent from many other formulas mentioned in this source.

In the book Anticancer Medicinal Herbs, formulas for thyroid tumors include:

Thyroid Adenoma Formula: prunella (20 g), polygonum stem (20 g), oyster shell (30 g), huangyaozi (9 g), curcuma (15 g), acorus (15 g), adenophora (15 g), bupleurum (10 g), sparganium (10 g), zedoaria (10 g).
**Thyroid Cyst Formula:** prunella (60 g), salvia (24 g), trichosanthes fruit rind (24 g), laminaria (24 g), sargassum (24 g), cyperus (24 g), iphigenia (24 g), bupleurum (15 g), red peony (18 g), peony (18 g). As follow-up, two ounces each of lean pork and prunella are simmered together and taken every day for some time to reinforce the curative effect.

**Thyroid Tumor Formula:** solidago (15 g), scutellaria (12 g), kalimera (12 g), lysimachia (24 g). This formula was tried for 53 cases of thyroid tumor and 28 of them were said to be cured after taking the formula for one year.

The above formulas are given by decoction. A formula made into pills for thyroid adenoma is produced by combining 50 grams each of sparganium, chih-ko, curcuma, tang-kuei, salvia, peony, blue citrus, sinapis, and anteater scales, plus 100 grams each of sargassum, laminaria, and prunella, and 150 grams each of zedoaria, dandelion, and oyster shell, plus 25 grams of carthamus. This is taken in pills, about 18 grams per day.

Differential diagnosis and treatment of thyroid tumors is described in the book *Cancer Treatment with Fu Zheng Pei Ben Principle*. The diagnostic categories are stagnation of phlegm and ying type (cold) mass, yin deficiency and blood stasis type, and qi and blood deficiency type. In each case, a formula is prescribed which contains herbs characteristic of those for treating any thyroid mass (not necessarily a tumor; there are no added anticancer agents). According to the author, "except for undifferentiated carcinoma, the prognosis for thyroid cancer is good." Using a combination of Western therapies (including surgery as necessary) and Chinese herbs, the five year survival rate is 78% to 95%, depending on the cancer type (but only 12.5% to 20% for the undifferentiated type).

**KANPO METHODS FOR THYROID DISEASES**

The characteristic of modern Kanpo is prescription of herb formulas that are included in the national registry and therefore covered by health insurance. There are about 200 such prescriptions. For hyperthyroidism, the following have been suggested:

- Baked Licorice Combination
- Bupleurum and Dragon Bone Combination
- Bupleurum and Peony Formula
- Bupleurum, Cinnamon, and Ginger Combination
- Pinellia and Magnolia Combination plus Cinnamon, Licorice, Oyster Shell, and Dragon Bone Combination
- Pinellia and Licorice Combination

Baked Licorice Combination is often given along with a second formula, such as Cinnamon and Hoelen Formula, Bupleurum and Cinnamon Combination, Minor Bupleurum Combination, or Bupleurum and Schizonepeta Combination. Of the formulas cited above, Baked Licorice Combination serves as the main yin-nourishing formula, the bupleurum formulas clear liver fire and disperse stagnant qi, and the pinellia formulas resolve phlegm. Cinnamon twig, an ingredient in several of the formulas (including Baked Licorice Combination) is said to settle rising heat and is therefore useful in some heat syndromes (especially for deficient patients), despite its warming and stimulating quality. Baked Licorice Combination was also reported [36] to be successful in treating a case of goiter complicated by Sjogren's syndrome, another autoimmune disease; treatment time until all symptoms were resolved was 17 months. Dr. Keisetsu Otsuka described a case of hyperthyroidism in his book *30 Years of Kanpo*. He treated a 38 year old man with Grave's disease, using Pinellia and Magnolia Combination with Cinnamon, Licorice, Oyster Shell, and Dragon Bone Combination. The patient, who had obviously swollen thyroid, slightly protruding eyes, and a pulse rate of 120 at the
beginning of treatment, felt better after only one week and had almost completely recovered in six months use of the formulas.

For hypothyroidism, the following have been suggested:

- Ginseng and Astragalus Combination
- Ginseng and Ginger Combination
- Tang-kuei and Peony Formula
- Tang-kuei, Evodia, and Ginger Combination
- Vitality Combination

These are all tonic prescriptions that enhance function of the stomach and spleen, nourish the blood, and stimulate circulation. Ginseng, aconite, and/or atractylodes are included in these formulations.

Professor Shigeru Ariji at the Institute of Oriental Medicine of Kinki University reported [37] on a case of myxedema. Treatment consisted of Vitality Combination extracts (10 grams/day), and Ginseng and Astragalus Combination extracts (10 grams/day), corresponding roughly to a decoction of the two formulas with a dosage of 90 grams/day. Within two weeks there was alleviation of subjective symptoms, and substantial improvement in objective symptoms within three months. She was able to resume normal lifestyle within six months.

The level of effectiveness of these formulas has not been reported on the basis of large clinical trials as has been done in China. However, unlike the treatments described by Chinese doctors, none of the formulas listed here were designed specifically for the treatment of thyroid diseases; rather, existing formulas for treatment of other ailments were matched up to symptom complexes characteristic of the patients with thyroid diseases. Thyroid cancers were not mentioned in the general Kanpo literature.

**TRADITIONAL CHINESE HERB FORMULAS USED IN CHINA**

Chinese physicians sometimes rely on the use of traditional formulas in a manner similar to Kanpo practitioners. The formulas are most often provided in the form of decoctions or pills made from powdered herbs rather than dried extracts, and slight modifications are made in many cases. The practice of selecting traditional formulas in China has no limitations related to government approval. In *Formulas and Strategies*, formulas mentioned to be useful for hyperthyroidism include three kidney nourishing formulas, Rehmannia Six Formula, Tortoise Shell Formula (*Da Bu Yin Wan*), and Curculigo and Epimedium Combination (Two Immortals); a yin nourishing formula for stomach deficiency (*Zeng Ye Tang*, comprised of scrophularia, ophiopogon, and raw rehmannia), Jade Screen Powder, an anti-scrophula pill (*Xiao Luo Wan*, made of scrophularia, oyster shell, and fritillaria), and a fire-purging formula *Dang Gui Liu Huang Tang*. Two formulas used in Kanpo, Baked Licorice Combination and Bupleurum and Dragon Bone Combination, are also suggested for hyperthyroidism in this source. The Sargassum Jade Pot Decoction (*Hai Zao Yu Hu Tang*), rich in seaweeds, is suggested for simple goiter, hyperthyroidism, and benign thyroid tumors. A small clinical study of a modified version of this formula with six patients was said to result in five patients cured and one markedly improved. In the treatment of hypothyroidism, Vitality Combination and Aconite and G.L. Combination (*Si Ni Tang*) were suggested. Both of these formulas contain aconite and dried ginger.
PHARMACOLOGICAL INVESTIGATIONS

If, in fact, most of the patients participating in the clinical trials suffer from an autoimmune disease, the question may be raised—how are they cured? Western medical researchers currently regard such ailments as manageable by appropriate immunosuppressive techniques, but incurable.

Virtually all formulas used for treating hyperthyroidism contain either seashells or seaweeds or both. Their role in treating autoimmunity has not established—for example, they are not used for diabetes, lupus, scleroderma, multiple sclerosis, or myasthenia gravis. In those disorders, a few prescriptions contain tortoise shell as a yin tonic, but it would seem that sea materials are not essential to treating autoimmunity. In one study of hyperthyroidism [21], with no sea materials used, it was claimed that over 62% of those treated were cured, with a low incidence of relapse even years after the therapy was ceased. The sea materials might play some role in regulating the thyroid hormones beyond their provision of iodine, and may reduce the duration of treatment necessary to gain satisfactory results. The mechanism of action would have to involve some inhibition of nodules or swellings. The same sea materials are used for tumors, cysts, fatty accumulations, and lymphatic nodules. By removing the thyroid nodules, they would reduce hyperthyroidism.

In addition, virtually all formulas used for hyperthyroidism contain some saponin components. Examples are fritillaria, pinellia, huangyaozi, and ophiopogon. Also, some of the symptom-alleviating herbs contain such components—notably bupleurum and zizyphus. However, in some studies with relatively high cure rates, the proportion of saponin-containing ingredients in the formulations is rather small and may be insufficient to provide an explanation of the clinical effects obtained. Essential oils in prunella, the citruses, and cyperus might contribute some curative effects for which the pharmacology is not yet established.

Ingredients found in treatments for hyperthyroidism that are common to other autoimmune disorders are astragalus, codonopsis, ophiopogon, rehmannia, scrophularia, bupleurum, citrus, salvia, peony, moutan, lycium fruit, and licorice. It should be noted that the majority of these herbs are attributed with some tonic actions, and many of them clear heat. Chinese studies of immune responses [38], using hemolytic plaque formation as a criteria, have shown that yin-nourishing, qi-regulating, and blood-vitalizing formulas can reduce immunologic attacks, such as those characteristic of autoimmunity and transplant rejection. A yang-nourishing formula enhanced immune responses. In terms of treatment of hyper- and hypo-thyroidism, the former is usually treated with yin-nourishing formulas and the latter with yang-nourishing formulas even though autoimmunity may be involved with both. The pharmacologic impact of the different types of herb formula might explain, in part, why apparently less satisfactory results have been obtained in treating hypothyroidism. In animal models with induced hyper- or hypothyroid conditions, it was shown that a mixture of rehmannia and polygonatum (yuzhu) reduced T3 and T4 levels in the hyperthyroid animals, while a mixture of either cinnamon bark and aconite or cistanche and epimedium increased T3 and T4 in hypothyroid animals [49].

Recent Japanese investigations have shown that phenolic glycosides, such as acetoside in rehmannia can inhibit the immune attack of cells [48]. A decoction of rehmannia was reported to produce remarkable therapeutic effects in most patients with rheumatic and rheumatoid arthritis that were treated in one Chinese study mentioned in Modern Study and Application of Materia Medica. Since arthritis inflammation is due to excessive antibody production and attack of joint tissue, this response may be due to selective immune suppression. A decoction of raw rehmannia proved effective in the treatment of eczema and neurodermatitis when used intermittently in very high doses (90 grams/day). Gentiana has been shown to inhibit antibody formation. Both rehmannia and gentiana inhibit formaldehyde-induced inflammation in rat paws. Scrophularia, a close relative of
rehmannia used in several hyperthyroid prescriptions, has glycosides similar to those found in rehmannia.

Feng Guoping and his colleagues at the Department of Pharmacology, Shanghai Second Medical College, studied the effects of two ingredients used for treating deficiency patients, rehmannia and tortoise shell, on renal adrenoreceptors [41]. In laboratory rats, they showed that these herbs prevented the increase in renal beta-adrenoreceptors that occurs with hyperthyroidism. Their experimental results were deemed solid basis for the use of yin tonics for correcting hypersensitivity of the sympathetic nervous system. Anemarrhena had a receptor-lowering action similar to that of rehmannia. Since adrenoreceptors influence nervous system functioning, it is possible that the use of these herbs in formulas can help regulate the system that has been adversely influenced by autoimmune attack.

It has long been known that consumption of vegetables in the Brassica Family can inhibit thyroid function. Rabbits fed on a cabbage diet develop goiter, due to content of sulfaguanidine. A Chinese herb from this plant family, sinapis (mustard seed), is sometimes used in hyperthyroid formulas because of its phlegm-resolving quality. Another seed, raphanus (radish seed), has been shown to influence iodotyrosine content of the thyroid gland, suggesting disruption of thyroxin synthesis when the herb is fed to rats for a long period of time. Related experiments show that the formula Tan Yin Wan [42] markedly inhibited the iodine uptake of the thyroid gland in both mice and rats, thus inhibiting overall thyroid function. Tan Yin Wan contains atractylodes (red and white), raphanus, sinapis, perilla fruit, cinnamon bark, aconite, and dry ginger. It is of interest to note that this is a warming, yang-nourishing prescription similar to those used for hypothyroidism except for the content of raphanus and sinapis that are used in resolving phlegm-masses.

Khatamines, amphetamine analogues found in the herb Catha edulis, produce an increase in metabolism that is at least partially mediated by thyroid stimulation [43]. Ephedra, contained in the Chinese herb ma-huang, has a similar chemical structure and a similar ability to enhance metabolism. Therefore, ma-huang preparations may help increase thyroid function in patients with hypothyroid function. Dr. S. I. Esner, at the Capital District Bariatric Clinic in New York, has been using a ma-huang extract preparation for increasing brown adipose tissue thermogenesis for weight loss; he reported that patients with chronic fatigue symptoms obtain relief by using this herb extract [44]. This may be through the thyroid stimulation.

Ginseng has been shown to exert at least part of its effects via the pituitary gland. Since ginseng activities include promotion of DNA, RNA, and protein synthesis, enhancement of energy metabolism, and oxygen utilization, it is possible that the pituitary activity leads to enhanced thyroid activity, finally promoting the metabolic changes. Ginseng is a component of many of the hypothyroid formulas. Licorice also strongly influences hormone balance and may play a role in enhancing metabolism through regulation of the pituitary and adrenal cortex.

Gossypol, a Chinese drug derived from the cotton plant used to inhibit male fertility (as a birth control method) and to treat female gynecological disorders including endometriosis, reduces serum levels of T3 and T4 and increases TSH [32]. Side effects of this widely used drug, such as fatigue, muscle weakness, and diminished sexual function, may be secondary effects of hypothyroidism induced by the drug. It may thus have some application in treating hyperthyroidism.

**IODINE CONTROVERSY IN HYPERTHYROID TREATMENT**

Three articles and one brief report reviewed in preparation of this paper mentioned avoidance of iodine-containing herbs and foods in the treatment of hyperthyroidism. In one paper [17], on differential treatment of hyperthyroidism, the author states that "because in some patients after taking
Laminaria and Ecklonia the thyroid becomes suddenly enlarged and other hyperthyroid symptoms become more serious, the iodine-containing herbs were not recommended in the treatment for those patients." In a brief letter [20] in the Sichuan Journal of TCM, it is pointed out that formulas with iodine-containing herbs are frequently prescribed for hyperthyroidism, but "modern medicine has realized that to apply iodides for the treatment of hyperthyroidism can sometimes induce ill effects. When there is a case of hyperthyroidism, uptake of radioiodine is typically stimulated. Ingesting iodides would produce a higher concentration of iodine in the thyroid, which temporarily inhibits the synthesis of thyroid hormone. At the same time, iodides can also inhibit the release of thyroid hormone which then accumulates in the thyroid. In this situation, the course of treatment would be increased, the dosage would need to be larger, and the remission rate would be worsened. Long-term use of iodine-containing agents may cause hyper- or hypothyroidism. Iodine use should be limited to preparatory treatment before surgery or to dangerous conditions (e.g., thyroid storm)." In the third article [45], about dietary therapy for hyperthyroidism prepared by California acupuncturist Heidi Middlebrooks, patients are told to avoid iodide-containing foods because iodine provides "the substrate for increased thyroxine production which, over the long term, may delay or counteract the effectiveness of herbal therapy (TCM) or antithyroid therapy (Western medicine), and indeed may precipitate an acute thyroid crisis." No supporting research was mentioned in making this statement.

In a brief report by California acupuncturist Ron Golden [46], based on his experience visiting a hospital in Guanzhou, an opinion by the doctors was relayed: "in cases of hyperthyroidism, one wanted to avoid using any of the seaweeds since they contained too much iodine." In a sample case study from the hospital, neither seaweeds nor seashells were included.

Thus, these authors consider iodine, in any amount, to be of potential harm by worsening hyperthyroidism in some patients and interfering with the cure. In contrast, more than a dozen clinical trials using iodine-containing ingredients claim a high level of positive responses. Other clinicians relaying their personal experiences recommend formulas that contain seaweeds. Also, traditional Chinese dietary therapy for hyperthyroidism usually is based on consuming sea materials (nonetheless, it should be remembered that in earlier times, most goiter was due to iodine deficiency). Thus, the controversy remains unresolved.

Clearly, if consumption of an iodine-containing herb prescription appears to make the hyperthyroid syndrome worse, then a non iodine-containing prescription should be tried as an alternative. However, unless the attending physician regards modest levels of iodine, as might be ingested in herb teas or common dietary items, to be a risk factor, it appears that the weight of opinion is that sea materials are an acceptable part of traditional Chinese therapy.

**SYMPTOM RESPONSES**

In an evaluation [16] of symptoms for 110 hyperthyroid patients, the most common symptoms and the response to a particular treatment (the herb formula Pingyin Fufang) were:

<table>
<thead>
<tr>
<th>Symptoms</th>
<th># of Cases</th>
<th>Eliminated</th>
<th>Alleviated</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palpitation</td>
<td>105</td>
<td>87</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>95</td>
<td>84</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Aversion to heat</td>
<td>91</td>
<td>79</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Excessive appetite</td>
<td>89</td>
<td>87</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Shaking (hand)</td>
<td>88</td>
<td>71</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Brachial artery murmur</td>
<td>88</td>
<td>79</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Emaciation</td>
<td>87</td>
<td>75</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>
Insomnia | 78 | 66 | 10 | 2 
Tremor (fingers) | 78 | 57 | 12 | 9 
Anxiety | 74 | 68 | 4 | 2 

There were only about 18 individuals who did not experience elimination of one of these symptoms.

In another study [10] in which specific symptoms were outlined with 50 patients, the main conditions were:

<table>
<thead>
<tr>
<th>Symptoms</th>
<th># of Cases</th>
<th>Eliminated</th>
<th>Alleviated</th>
<th>No Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>50</td>
<td>36</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Palpitation</td>
<td>48</td>
<td>32</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Neck swelling</td>
<td>47</td>
<td>27</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Quickly angered</td>
<td>47</td>
<td>28</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Aversion to heat</td>
<td>46</td>
<td>28</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Insomnia</td>
<td>39</td>
<td>25</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>Excessive appetite</td>
<td>34</td>
<td>30</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Irregular menstration</td>
<td>29</td>
<td>20</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Low fever</td>
<td>25</td>
<td>24</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Loose stool</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

This study did not have as strong results as the previous one in terms of symptom relief. A symptom of concern to Western practitioners, exophthalmos, was reported in this study to have affected only 14 of the patients, of which seven were resolved and four more got better, while three were unchanged.

In a clinical evaluation that focused on treatment of exophthalmos [12], there were three formulas that could be selected, one for liver fire and phlegm wetness, one for liver and kidney yin deficiency, and one for excessive liver fire. In the treatment of 12 patients, it was reported that five of the cases were markedly improved and the other seven were somewhat improved. At the same time, other symptoms were improved with similar frequency, such as palpitation, aversion to heat, excessive perspiration, excessive appetite, anxiety, and insomnia.

LABORATORY MEASUREMENTS AND THE IMPACT OF CHINESE HERB THERAPY
The following are standard laboratory measures of thyroid disease:

**T₃ and T₄:** Levels are elevated in hyperthyroid and reduced in hypothyroidism, and this measure is a defining feature of the diseases. One of the methods of determining duration of treatment with Chinese herbs is to monitor this parameter and stop treatment only when the values are normalized. Hyperthyroid treatment with Chinese herbs may have a duration as short as one month, or as long as three years.

**Iodine uptake:** Radioactive iodine is utilized to allow monitoring of uptake, by measurement of radioactive emissions at the neck in the region of the thyroid gland. In general, iodine uptake is increased in hyperthyroid cases, due in part to the larger amount of thyroid tissue and the higher
production of the iodine-based \( T_3 \) and \( T_4 \), and iodine uptake is reduced in hypothyroidism. Clinical values for iodine uptake usually keep pace with those for \( T_3 \) and \( T_4 \) production.

**MCA (a.k.a. MSA) and TGA:** Antibodies to the thyroid gland circulating in the plasma. The level of these antibodies is reduced by immune-suppressing therapies (e.g., tripterygium extract tablets) and has been shown to be reduced by moxibustion (in treatment of Hashimoto’s thyroiditis), but these are not altered by administration of thyroxine or by other therapies that do not have an effect on the immune system. MCA and TGA are probably not altered in cases of thyroid tumor.

**BMR:** Basal metabolic rate is raised in hyperthyroid cases and lowered in hypothyroid cases. Since metabolic rate is influenced by \( T_3 \) and \( T_4 \) levels, the BMR measurement closely follows the \( T_3 \) and \( T_4 \) measures.

**cAMP and cGMP:** In hyperthyroid cases, cAMP is elevated and cGMP is reduced; the reverse situation exists with hypothyroid cases. Since cyclic nucleotides are directly involved in metabolism, changes in BMR and changes in cAMP/cGMP ratios should be parallel.

**TSH:** Thyroid-stimulating hormone is released from the pituitary in a feedback loop with \( T_3 /T_4 \) levels in normal individuals. TSH levels are usually reduced in hyperthyroidism and elevated in hypothyroidism.

Several of the clinical reports provided detailed analysis of laboratory measures, while a few simply classified patient responses according to success or failure in restoring "normal values" for those items assayed. The following are offered as examples of changes in measured parameters, using average values for the clinical study group before and after the therapeutic program.

**Treatment of hyperthyroidism with tripterygium tablets [1]:**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>( T_3 )</td>
<td>363</td>
<td>185</td>
</tr>
<tr>
<td>( T_3 )</td>
<td>16.5</td>
<td>10.7</td>
</tr>
<tr>
<td>TGA</td>
<td>46.7</td>
<td>14.6</td>
</tr>
<tr>
<td>MSA</td>
<td>38.3</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Treatment of hyperthyroidism with Jiakangling herb tablets or decoction [5]:**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>( T_3 )</td>
<td>425</td>
<td>339</td>
</tr>
<tr>
<td>( T_3 )</td>
<td>23.6</td>
<td>18.3</td>
</tr>
</tbody>
</table>

**Treatment of hypothyroidism with astragalus-based formula [14]:**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>cAMP</td>
<td>14.7</td>
<td>22.5</td>
</tr>
<tr>
<td>cGMP</td>
<td>7.92</td>
<td>5.43</td>
</tr>
</tbody>
</table>

**Treatment of hyperthyroidism with rehmannia-based formula [14]:**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>cAMP</td>
<td>42.8</td>
<td>21.45</td>
</tr>
<tr>
<td>cGMP</td>
<td>4.68</td>
<td>6.35</td>
</tr>
<tr>
<td>BMR</td>
<td>41.8</td>
<td>16.28</td>
</tr>
<tr>
<td>TSH</td>
<td>16.28</td>
<td>7.55</td>
</tr>
</tbody>
</table>
TRADITIONAL DIAGNOSTIC INDICATORS

According to The Essence and Scientific Background of Tongue Diagnosis, hyperthyroidism consistently produces a cardinal red tongue appearance while hypothyroidism produces a pale tongue appearance. This is believed to be a direct reflection of changes in basal metabolic rate which influences blood circulation to the tongue. In the absence of other diseases, the tongue coating should be white, though denuded red tongues are seen in some cases of hyperthyroidism. While a white coating occurs in early stage of disease caused by external pathogens, it has been noted in cases of thyroid adenoma and other thyroid diseases. The tongue may be trembling in hyperthyroid cases and flaccid in hypothyroid cases.

The pulse in hyperthyroid cases can be expected to be rapid, irregular, and knotty. In hypothyroid cases, it is expected to be slow, soft, and deep. Both the tongue appearance and the pulse should be responsive to successful therapies since the alteration in metabolic rate will influence these parameters.

ACUPUNCTURE/MOXIBUSTION

Acupuncture is not frequently listed as a treatment for thyroid disorders, but a few suggestions have appeared in the literature.

Comprehensive Guide To Chinese Herbal Medicine mentions the following as "common points" for hyperthyroidism:

naohui (TB13)
zusanli (ST36)
tianding (LI17)
hegu (LI4)
tianrong (SI17)
tiantu (CV22)

The Treatment of Knotty Diseases with Chinese Acupuncture and Chinese Herbal Medicine lists the following for "senile hyperthyroidism:"

guanyuan (CV4)
shenshu (BL23)
ingmen (GV4)

The above with reinforcing method; those below with reducing technique:

yongquan (KI1)
shuidao (ST28)
feishu (BL13)
chize (LU5)
xingjian (LV2)

This source also lists moxa points: guanyuan (CV4), qihai (CV6), mingmen (GV4), and shenshu (BL23) for cases of impairment of yin affecting yang.

According to Modern Clinic Necessities for Acupuncture and Moxibustion, acupuncture therapy could resolve the symptoms in 25% of patients. Recommended needling points included


Treatment for Thyroid Diseases with Chinese Herbal Medicine

pingyin and qiyin (near CV22) as primary points, and neiguan (PC6), jianshi (PC5), and zusanli (ST36) as secondary points. For exophthalmos, upper tianzhu (BL10) and fengchi (GB20) are added (with needling to direct sensation to the eye region). Three to five points are selected with a qi-promoting technique to be used at the pingyin point and reducing method to be used at the qiyin point. Needle retention is for thirty minutes, done once or twice daily. Of 129 patients treated by this method, symptoms were controlled in 34 cases (26%). Moxibustion is applied to the main points dazhu (BL11), fengmen (BL12), feishu (BL13), fengfu (GV16), dazhui (GV14) and shengzhu (GV12). Secondary points are neiguan (PC6), jianshi (PC5), taixi (KI13), zaohai (KI16), Fuliu (KI17), and sanyinjiao (SP6). Two to three of the main points and a similar number of secondary points are treated once daily with seven small moxa cones at each point.

A clinical study of acupuncture treatment for benign thyroid nodules (thyroid adenoma, nodular goiter, or cystic goiter, but not thyroid carcinoma or thyroiditis) revealed a long-term effective rate of 90% in resolving the nodules [47]. Sixty-five patients were treated by applying six to eight needles surrounding a nodule and one directed at the center of the nodule (not intending to penetrate the nodule, however). Strong stimulation was applied for twenty minutes. In addition, tianzhu (BL10), dazhu (BL11), neiguan (PC6), and qigu (KI2) were needled every other day but with needles withdrawn after the needling sensation (deqi) was felt. Nearly half of the individuals were cured (measured by palpation of the neck and by ultrasonography), and most of the remaining individuals showed marked improvement.

In a clinical study of moxibustion in the treatment of Hashimoto's thyroiditis [23], points selected were in two groups, the first consisting of dazhui (GV14), shenshu (BL23), and mingmen (GV4), and the second consisting of shenzhong (CV6), zhongwan (CV12), and guanyuan (CV4). These two sets were alternated from one visit to the next and treatments were given every other day for twenty treatments (ten each set). Moxa was done with cones on top of cakes of processed aconite (fuzi). It was reported that the moxibustion treatments reduced serum TGA and MCA (indicating change in the autoimmune process), the total serum T3 and T4 showed a marked increase, and the TSH showed a decrease. The clinical symptoms of hypothyroidism were alleviated. A control group of patients receiving thyroxine showed no change in autoimmunity.

The basic disorder of hyperthyroidism, with suggested treatment strategies, is presented in the book Acupuncture Cases from China. It is said that hyperthyroidism "is related to emotional factors, kidney yin deficiency, fatigue, or congenital weakness. The liver is in charge of purging and discharging. It likes movement and dislikes stagnation. When it is affected by emotional factors the functional qi stagnates. Stagnation of liver qi can transform into fire, which in turn can impair the yin. When the yin is impaired, deficiency fire agitates inside, impairing the heart in the upper heater and the kidney in the lower heater. If this condition lasts for a long time, the yin of the heart, liver, and kidney are consumed, and they act on each other, depleting each other further. The disease is caused by deficiency but its symptoms are excess. The cause is deficiency fire and the symptoms are exuberant fire. Heat in the heart transforms to the stomach, accelerating metabolism and causing hunger. At the same time, heat in the stomach and liver condenses the essence in the yang ming channel into phlegm. Phlegm and qi rise to the neck to form goiter, the swollen thyroid. When the phlegm gets to the liver channel and lodges in the eyes, it causes bulging eyes." to treat this condition, one may use the following points: jianshi (PC5) and shenmen (HT7) to purge the heat in the heart, relieve heat in the liver, and nourish the stomach. When the heat in the heart is purged, the fire does not burn the metal, so the metal can control the wood. Also, taixi (KI3) and fuliu (KI7) are used to nourish kidney yin. When the water is full it nourishes the liver. Finally, shuitu (ST10) clears the channel qi of the stomach and removes stasis of phlegm in the neck. A female patient suffering from hyperthyroidism for more than two years was treated following this methodology. Needling was done
every other day for nine weeks (with some changes in the selection of points after three and six weeks), at which time she was considered cured; there was no relapse for six months of follow-up.

SUMMARY AND CONCLUSION

Thyroid diseases can be cured or controlled in most patients, according to Chinese reports published during the past twelve years. For those who are cured, relapse is relatively rare during a period of up to five years following treatment. Among those who are not cured but show symptomatic improvement, usually with accompanying changes in blood parameters, continued use of herbs, alone or with Western drugs, is necessary. In those cases, it appears that Chinese herbs provide better results than using drugs alone. Only a small number of individuals fail to respond to the Oriental therapies.

There is a clear pattern of herb selection for treatment of thyroid diseases. When thyroid nodules or swellings are present, phlegm-resolving herbs are used. Other herbs are selected for treatment of specific syndromes or symptoms. Hyperthyroid cases are treated with yin nourishing and/or fire purging herbs while hypothyroid cases are treated with qi and yang tonifying herbs. The number of different herbs commonly used by Chinese doctors for treatment of thyroid diseases are relatively small, thus making selection based on accumulated Chinese experience—but applied to new cases—relatively easy. Acupuncture and moxibustion point selection may include local treatment plus a focus on treating the stomach and spleen meridians, the governing and bladder vessels along the back, and the kidney and conception vessels along the front.

The dosage of herbs used in Chinese clinical trials showing effective treatment of thyroid diseases is higher than commonly used by Western practitioners but comparable to those used in treating other chronic ailments. Powdered herbs in pill form are consumed in the amount of 18-30 grams per day, while decoctions are consumed in the amount of about 90-210 grams per day. Duration of therapy typically ranges from six weeks to six months, though some patients require more than a year of treatment to obtain satisfactory resolution of symptoms. Western drugs used in conjunction with Chinese herbs help to resolve symptoms during the treatment period and appear to enhance the overall effects of the therapy towards attaining a cure or major resolution of the disease. Acupuncture and moxibustion also improve the effects of Chinese herb therapy, though their impact on total duration of treatment has not been ascertained. From a single study with moxibustion, it appears this technique can provide rapid relief for hypothyroid cases.

The mechanism of action of the Chinese herb therapies for thyroid diseases, as expressed in Western pharmacology terms, remains unknown. Clearly, some of the herb ingredients used in the complex formulas regulate the hormone system and/or the antibody attack that causes changes in thyroid function. There is some controversy about using iodine-rich materials (mainly seaweeds) in making Chinese herb formulas, but it appears that in most cases there is no problem in utilizing such materials.

The continued use of surgical thyroidectomy and iodine-irradiation of the thyroid gland to remove thyroid activity in hyperthyroid patients may be deemed a last resort rather than a standard method of therapy if Chinese medicine is incorporated into the health care system. This can reduce the health problems encountered by Grave's disease patients and also reduce the cost of life-long health care.

REFERENCES

Note: references 1-20, 22-23, and 49-51 were published in Chinese; a translation of portions of the original text was made by Dr. Fu Kezhi, and the translated materials were consulted for the purpose or preparing this paper. The other references were published in English. Journal references are listed first. Book references, mentioned by title in this article, are listed at the end.

2. Chen Zhimin, Huang Shuhua, et al., Fufang Baijiezi used to heal 54 cases of hyperthyroidism, Chinese Journal of Integrated Traditional and Western Medicine 1988, 8(7).


8. Yu Jixian, 100 cases of hyperthyroidism treated with modified Bupleurum and Dragon Bone Decoction, Journal of Hunan College of Traditional Chinese Medicine 1986, 6(2).


11. Jiang Liji and Jiang Yunxiang, Jiawei Sili San used to treat hyperthyroidism, Shanghai Journal of Traditional Chinese Medicine 1982, 1.


17. Li Weifan and Zhang Guiliang, An experience of treating hyperthyroidism by differentiation of syndromes according to traditional Chinese medicine, Middle Medical Journal 1980, 3.

18. Li Yingquan, Jiawei Haizao Yuhu Tang used to heal hyperthyroidism, Hunan Medical Journal 1980, 1.


41. ACTA Acadamiae Medicinae Secondae Shanghai 1985, 5(2).


**BOOKS.**


Chen Zelin and Chen Meifang, *The Essence and Scientific Background of Tongue Diagnosis*, 1989 Oriental Healing Arts Institute, Long Beach, CA.


Hsu, Hong-yen, *Treating Cancer with Chinese Herbs*, 1990 Oriental Healing Arts Institute, Long Beach, CA.
Kikutani Toyohiko, *Combined Use of Western Therapies and Chinese Medicine*, 1987 Oriental Healing Arts Institute, Long Beach, CA.


Keisetsu Otsuka, *30 Years of Kanpo*, 1984 Oriental Healing Arts Institute, Long Beach, CA.
