

Veterinary Newsletter 🛞 Winter 2010



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Sincerely,

John fatt Lorena Monda

John Scott, DOM and Lorena Monda, DOM

TREATING CANINE HYPOTHYROIDISM By Signe Beebe, DVM

Hypothyroidism is a multi-systemic disorder resulting from deficiency of thyroid hormones, characterized by hypometabolism. It is the most common endocrine disease of canines, and more than 95% of clinical cases of hypothyroidism result from destruction of the thyroid gland (primary hypothyroidism). There is no gender predilection, and there is a higher prevalence of hypothyroidism in specific breeds. Conventional medicine regards hypothyroidism as a deficiency of thyroid hormone associated with a lack of thyroid hormone production due to destruction or degeneration of the thyroid gland. The two most common causes of adult canine hypothyroidism are idiopathic atrophy (loss of thyroid parenchyma) and lymphocytic thyroiditis (immune-mediated destruction) of the gland. Factors that trigger the disease are not clear, though genetic factors undoubtedly play a role in lymphocytic thyroiditis and idiopathic thyroid disorder and are thought to represent

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the end stage of autoimmune lymphocytic thyroiditis. Auto-immune thyroiditis, is present in approximately half of hypothyroid dogs, while idiopathic atrophy accounts for the remaining half. There is speculation that poor diet in combination with over-vaccination may be contributing risk factors in the development of the disease. Some studies show increased blood levels of thyroid antibodies occurring shortly after vaccination with multiple-disease component vaccines. Clinical signs of hypothyroidism usually develop in dogs that are middle aged, 2 to 8 years old, or earlier in breeds with increased risk.

Thyroid hormone is the primary regulator of metabolism and can affect every system in the body. The clinical manifestations of hypothyroidism result from decreased cellular metabolism and its effects on the animal's activity, mental status, dermatological, neuromuscular and reproductive systems. The clinical manifestations seen are dependent on the breed and the age of the dog and include obesity, mental dullness, lethargy, weakness, exercise intolerance, weight gain without increased

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food intake, and various dermatological manifestations. Infrequently, myxedema and neuromuscular signs (seizures, ataxia, circling, facial nerve paralysis) may be present. Often, these signs appear gradually and can go unnoticed by the owner, thereby prolonging the time until diagnosis. Less commonly seen clinical manifestations include: infertility, dilated cardiomyopathy, laryngeal paralysis, and megaesophagus. Several reports have linked hypothyroidism with behavioral changes characterized by aggression, hyperactivity, and/or fearfulness. The diagnosis of canine hypothyroidism is based on history, physical examination, CBC, serum biochemistry panel, urinalysis, and baseline total serum thyroxine (T4). Accurate diagnosis of hypothyroidism is often made using a single measurement of serum T4 and/or free T4 by equilibrium dialysis (fT4). It is important to note that other non-thyroidal systemic diseases can suppress serum T4 concentrations to cause falsely low thyroid levels (euthyroid sick syndrome, for example).

CANINE HYPOTHYROIDISM AND TCVM

Hypothyroidism is considered to be a yin-yang imbalance. A relative balance of yin and yang represents a healthy state of the body, so achieving balance between the two is a basic goal and principle of Chinese medicine. The origins of hypothyroidism are associated with the kidney. Pre-natal *jing* (kidney *jing*) is the foundation of *yuan* qi (source qi). Yuan qi is the active form of kidney jing and is divided into the primary yin and primary yang. It is distributed throughout the body by the sanjiao and is stored in the extraordinary vessels. Yuan gi requires nourishment by *gu* qi, which is produced by the spleen from food, and is required for normal function of the zang-fu organs. Yuan qi is the dynamic force of normal activities, and is required for normal metabolism. Yuan qi deficiency can lead to organ dysfunction, poor immunity, and impaired growth and development of the body. This includes the production, secretion, and action of hormones within the body. A deficiency of kidney *jing*/ yuan qi can develop as a result of poor genetic material from the parents, chronic illness, overwork, over breeding, poor diet, injury from drugs, and/or introduction of heat toxins (for example, from excessive vaccination). Thus the development of hypothyroidism is thought to result from injury to, consumption of, or deficiency of kidney *jing* that leads to a deficiency of primary yin and yang. Clinically, hypothyroidism is most often associated with deficiency of kidney yang (mingmen fire). However, signs of dual yin-yang deficiency would be expected as both yin and yang emanate from the same source. Although kidney essence is the root of all hormones in the body, deficiency of yuan qi, kidney yang, or kidney yin may all be involved in conditions characterized by deficient hormones, from a Chinese medicine perspective. Which one (yuan qi, kidney yang, or kidney yin) is most deficient depends on the particular hormones involved, as well as the age, sex, and constitution of the individual.

Some dogs that are diagnosed with early hypothyroidism have signs of qi deficiency without overt signs of classic yang deficiency, as their condition has not been present long enough to manifest in these signs. However, if the condition is left untreated, over time gi deficiency will progress to yang deficiency. Yang and qi are on a continuum; clinical signs of yang deficiency includes those of gi deficiency with more severe signs of cold. Many animals with hypothyroidism will have variable degrees of yin deficiency in addition to qi-yang deficiency. The degree of vin or vang clinical signs depends on the individual animal; there are typically signs of both in this disease, albeit with a predominance of qi-yang deficient signs. Yinblood deficiency is thought to contribute to the neurological and behavioral manifestations of the disease including seizures, hyperactivity, fearfulness, and aggression. There is speculation that damage to kidney *jing* and subsequent destruction of the thyroid gland may be triggered by introduction of heat-toxins from over-vaccination in genetically predisposed animals with poor *jing*.

In summary, the pathophysiology of hypothyroidism involves a deficiency of kidney *jing* (essence) that leads to deficiency yuan qi, kidney yin, or kidney yang. In hypothyroidism, deficiency of kidney *jing*, with subsequent deficiency of kidney yang is seen as the fundamental etiology of hypothyroidism that can be complicated by qi-yang deficiency of the spleen and heart, yin deficiency, and dampness. Traditional Chinese Veterinary Medicine (TCVM) acknowledges two primary patterns of hypothyroidism: kidney jing deficiency (yuan qi deficiency) and qi-yin deficiency. Typically, animals will have secondary patterns that can affect any system of the body depending on the individual. Spleen qi-yang deficiency is a common secondary pattern in nearly all cases of hypothyroidism due to the interdependent relationship between the kidney (source of pre-natal essence) and the spleen (source of post-natal essence).

TREATMENT GUIDE Kidney Jing (Yuan Qi) Deficiency Pattern

Treatment Principle: Tonify kidney jing (essence)

Clinical Signs:

- Mental dullness, fatigue easily, exercise intolerance, weak constitution
- Dry, flaky skin, dry, dull hair coat
- Musculoskeletal and dental developmental abnormalities
- Visual problems, deafness
- Infertility
- Tongue: Pale pink-purple. Pulse: Deep, weak.

Chinese Herbal Formula Recommendations:

You Gui Wan (KPC Herbs) is a classical formula that warms and tonifies kidney yang, replenishes *jing* and tonifies blood. This formula is ideal for pure kidney yang deficiency with diminished *mingmen* fire and cold signs.

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This formula is not for long-term use; once clinical signs have resolved, a more balanced, long-term formula should be used, such as **Vital Treasure Formula (GFCH)**.

Zuo Gui Wan (KPC) is a classical formula that nourishes kidney yin, replenishes essence (*jing*) and marrow, and tonifies the kidneys. **You Gui Wan (KPC)** and **Zuo Gui Wan** can be used together to treat kidney *jing*, yin and yang deficiencies depending on the clinical signs. This formula is not for long-term use; once clinical signs have resolved, a more balanced, long-term formula should be used, such as **Rehmannia Six Formula** or **Nourish Essence Formula**.

Eleuthero Tablets (GFCH) contains the single herb, eleuthero root (acanthopanacis senticosi radix et caulis), which has potent adaptogenic properties that promote resistance to disease, fight fatigue, and counter the effects of stress to help return the animal to balance. It has actions to tonify spleen, warm the kidneys, invigorate the blood, and calm the *shen*. It can be added to many formulas in the treatment of hypothyroidism to improve clinical results.

Qi-Yin Deficiency Pattern

Treatment Principle: Tonify qi, nourish yin and blood

Clinical Signs:

- Weight gain without increased food intake
- Dry, dull, thin hair coat, increased shedding, alopecia
- Seborrhea, frequent ear and skin infections
- Scaly, dry skin, thickened or loose skin, hyperpigmentation of skin
- Aversion to cold
- Cold, painful limbs and back
- Incontinence, long duration of clear urine
- Lethargy, exercise intolerance, weak bark
- Loose stools with undigested food, diarrhea
- Lower limb edema
- Tongue: red and dry or pale, swollen, thin and moist or pale to purple. Pulse: thin, weak, deep.

Chinese Herbal Formula Recommendations:

Jin Gui Shen Qi Wan (KPC) is a classical formula that warms and tonifies kidney yang (*mingmen* fire). Although it is described as tonifying kidney yang, this formula is typically used to treat disorders of both yin and yang. The composition of the formula is the same as Liu Wei Di Huang Wan with the addition of *fu zi* (aconite) and *gui zhi* (cinnamon twig) to warm yang and *mingmen* fire. If *gui zhi* is replaced by *rou gui* (cinnamon bark) in this formula to increase the ability to warm the lower *jiao*, it is then called Ba Wei Di Huang Wan (KPC). This is a well balanced formula and is commonly used to treat endocrine diseases. Jin Gui Shen Qi Wan can be combined with Six Gentlemen Formula (GFCH) in cases with spleen qi deficiency and dampness.

Essential Yang Formula (GFCH) is a modification of the classic formula **Jin Gui Shen Qi Wan** that warms and tonifies kidney yang (*mingmen* fire). The aconite (*fu zi*) has been removed and other herbs added to nourish yin and blood. This formula can be used to warm and nourish yang for a longer term than those formulas that contain aconite.

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Rehmannia Six Formula (GFCH) is the classical formula, Liu Wei Di Huang Wan (Six-Ingredient Pill with Rehmannia), used to tonify kidney and liver yin; additionally it nourishes blood, boosts qi and nourishes essence. It is a well balanced formula that can be taken long term. As it contains herbs that are heavy, rich and cloying, it should be used with caution and modified in animals with weak digestion and significant spleen-stomach deficiencies. It can be combined with Gingseng & Astralgalus Formula or Six Gentlemen Formula to treat hypothyroidism with qi-yin deficiency.

Huan Shao Dan (KPC) is a classical formula that strengthens spleen, stomach, kidney and heart, tonifies qi, blood, *jing*, and warms yang. It can be used as a maintenance formula for endocrine disorders such as hypothyroidism, diabetes, and hypoadrenocorticism due to its broadspectrum tonification effects.

Vital Treasure Formula (GFCH) is a modern formula designed to nourish kidney yang, tonify qi and yin, and supplement liver blood. It can be used as a maintenance formula for hypothyroid animals that are primarily yang deficient and can support qi and yin at the same time, in addition to preventing overheating from yang tonifying herbs.

Jing Qi Formula (GFCH) is a modern formula that can be used as a maintenance formula in older dogs diagnosed with hypothyroidism to rebuild exhausted qi and essence. It can be given long term. It has actions to nourish *jing* (essence), tonify and move qi, and nourish kidney and liver yin.

Yuan Support Formula (GFCH) is based on the formula **Jia Wei Jian Gu Tang** and has actions to nourish spleen qi and kidney yang, nourish blood, relieve liver qi stagnation, nourish and calm the shen. It can be used in dogs with hypothyroidism that also have behavioral disorders.

Spleen Qi Deficiency Pattern

Treatment Principle: Tonify qi, strengthen spleen to dispel damp, warm spleen yang as needed.

Clinical Signs:

- Poor appetite to anorexia
- Lethargy, fatigue, exercise intolerance
- Muscle weakness, weak limbs
- Obese or emaciated
- Loose stool or diarrhea with undigested food
- Hair that is easily depilated
- Tongue: pink to pale, may be light purple, flabby. Pulse: deep and weak, especially on the right.

Chinese Herbal Formula Recommendations: Six Gentlemen Formula (GFCH) is the classical formula, **Liu Jun Zi Tang,** that supplements qi, fortifies the spleen, transforms phlegm and expels damp. Constitutional yang deficiency prevents the spleen from processing damp that can give rise to chronic damp digestive disorders or phlegm collection in the lung.

Shen Ling Bai Zhu San (KPC) is a classical formula that tonifies qi, strengthens spleen, drains damp and stops

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Treating Canine Hypothyroidism, continued from page 3

diarrhea. This formula treats spleen-stomach deficiencies with accumulation of damp that disrupts the spleen's transformation and transportation functions.

Ginseng & Astragalus Formula (GFCH) is the classical formula Bu Zhong Yi Qi Tang (Tonify the Middle and Augment the Qi Decoction) that tonifies the middle *jiao*, boosts qi, uplifts yang and supports prolapsed organs. It is often used as the base formula to which other herbs are added to treat specific symptoms. Because this formula is warm and lifts yang, it is not appropriate for dogs with signs of deficient heat. Ginseng & Astragalus Formula can be combined with Rehmannia Six Formula or Nourish Essence Formula to treat qi-yin deficiency.

Sea of Qi Formula (GFCH) is useful in hypothyroid patients with kidney deficiency who also have spleen yang deficiency and poor digestion, and who have difficulty processing kidney tonics alone. It has actions to warm and supplement the middle *jiao*, strengthen spleen and kidney yang to tonify qi and yang.

SIGNE BEEBE, DVM is a graduate of the Purdue University School of Veterinary Medicine, and has practiced integrative medicine since 1995. She is the owner of the Integrative Veterinary Center in Sacramento, California, where she combines acupuncture and Chinese herbal medicine with conventional medical therapies. Dr. Beebe is the co-author of the Clinical Handbook of Veterinary Herbal Medicine. She regularly lectures in the US and internationally.



HERBAL MEDICINE Signe Beebe, DVM, Michael Salewski, DVM, Lorena Monda, DOM, John Scott, DOM

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