



Got a Goiter?

Iodine Toxicity and Deficiency Symptoms

Jan Evans



The thyroid is small bilobal gland in your horse's neck and it has large implications on its health. The Hypothalamic Pituitary Thyroid (HPT) Axis controls the cycles of interaction between circulating cortisol and thyroid hormone levels.¹ This interaction among the hypothalamus and pituitary glands in the brain with the thyroid gland, balances the horse's metabolism and growth.

Goiter Belt in the United States

In the early 1900s, during World War I, the north-central section of the United States, from the Rockies to the Great Lakes and eastward to western New York, earned the name "Goiter Belt," due to higher incidences of enlarged thyroid glands in armed forces recruits in the region. The lack of iodine in the soil and water caused the goiters to develop. As iodized

salt became readily available, goiters became less common.

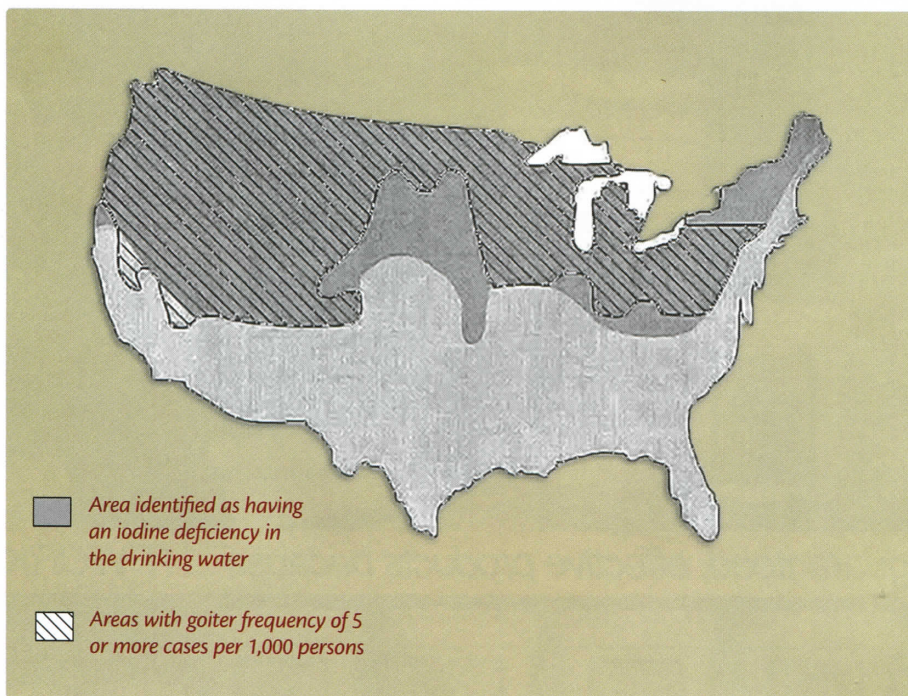
The same iodine deficiency makes Horses susceptible to goiters. Most horses with goiters are euthyroid—have normal thyroid function. If you live in the Goiter Belt, should you be concerned for your horse?

Is it Goiter, Hypothyroidism or Equine Metabolic Syndrome/Insulin Resistance?

Goiters are usually caused by lack of the trace mineral iodine. Excess iodine can also cause goiters. A goiter appears as swelling in the throatlatch area. The lumps are the swollen lobes of the thyroid gland.

"Easy keepers" have often been branded as hypothyroid with low thyroid function, but comprehensive testing for T3, T4, and TSH should be done before medicating for low thyroid. If you treat a horse for low thyroid based on symptoms alone, the drug treatment can actually cause hypothyroidism by suppressing normal thyroid function.

Equine Metabolic Syndrome, or EMS, is sometimes confused with hypothyroidism. Horses with EMS seem to gain weight while eating nothing but low quality hay. They



Goiter Belt Image from Armed Forces Institute of Pathology: The Goiter Belt in the United States has low levels of Iodine in the soil and water

are prone to laminitis at the end of summer and into fall. This happens as they are “bulking up” for the lack of food that could be absent in winter. These horses are also prone to cold-induced laminitis when winter temperatures drop.

That strong relationship within the HPT axis affects all three organs. As Eleanor Kellon, VMD, writes, “an under-functioning thyroid does not cause insulin resistance or Cushing’s Disease, but may be caused by them.”²

Prevention and Treatment of Goiters

If your horse starts to develop a goiter, it’s important to start treatment promptly. Since goiter can be caused by too much or too little iodine, you’ll have to evaluate the iodine in your horse’s diet. Blood plasma levels of thyroid hormones can fluctuate, so it’s difficult to determine iodine excess or deficiency through a blood test.³

Goitrogenic feeds can hinder iodine absorption into the thyroid gland. Avoid feeding raw soybeans, kale, white clover, turnips, rutabagas, or broccoli. The heating of soybeans to make soybean meal eliminates the goitrogenic properties. Weeds can also be goitrogenic. Nitrate accumulators such as mustard weed, lambsquarter, curlydock, sorghum-Sudangrass and redroot pigweed are goitrogenic, as well as potentially poisonous. If your horse is eating enough iodine but develops a goiter, check your pasture or forage for these plants.

If you have been feeding kelp, iodine overdose is probably the culprit. Kelp has various amounts of iodine up to 66 mg in 1 ounce (28 grams). A moderately working 1,100 pound horse requires 4 mg iodine per day. Pregnant mares have experienced iodine toxicity at 48–55 mg per day.⁴ *The Guide to Equine Supplements and Nutraceuticals* recommends keeping

iodine daily dose at under 35 mg per day for pregnant mares.⁵

Both excess and deficient iodine can adversely affect unborn foals. Congenital hypothyroidism and dysmaturity syndrome in foals occurs sporadically in Western Canada, the Pacific Northwest, and other areas of the United States. These foals are born after prolonged pregnancies with goiter and symptoms of prematurity. Clusters of foals have been affected on a farm in one year without repetition in subsequent years. Causes have not been determined, but it seems that diets low in iodine, high in nitrates with possible ingestion goitrogenic plants are the origin.⁶

Since iodine is a necessary micronutrient, most commercial feeds contain it. Salt blocks may contain iodine. Some well water has iodine. If you suspect your horse may have iodine overdose be aware of any topical products—shampoos, hoof

Finally, answers to your prayers...

Get your horse back to pasture faster

Get your horse back to breathing better faster

Chronic sore feet?

Coughing/COPD/Asthma?

#1

Insulin Resistance Supplement

The one and only original

Discover Dog HEIRO too!

“Best decision I ever made. I love, love, love HEIRO!”

Alexis, CA

HEIRO & HEAVE HO are:

- Natural Herbs, NO GMO Ingredients, Gluten Free
- Certified Melamine-, Pesticide-, Lead- and Drug-Free
- Developed by Dr. Frank Reilly, DVM



New



Molasses Flavor
Sugar-Free Apple Flavor
For Insulin Resistant/Cushing's horses

“HEAVE HO is a miracle!”

Nancy, PA

See results in 14 DAYS!

GUARANTEED RESULTS or your money back!

Ask for them by name or call 800-578-9234 for a dealer near you!

HH18

Testing for Iodine Levels

The Diagnostic Center for Population and Animal Health at Michigan State University offers iodine level testing. There are two types of iodine found in blood serum.

“Iodine in the serum exists in inorganic and protein-bound forms. The protein-bound forms represent the thyroid hormones, primarily, while the inorganic iodine is not biologically active. Inorganic iodine typically represents the large majority of iodine present in serum. Total serum iodine and particularly serum inorganic iodine reflect the current dietary iodine

consumption. Serum inorganic iodine is a good short-term measure of iodine consumption and will reflect excessive iodine supplementation, when present.” <https://www.dcpah.msu.edu/Sections/Nutrition/WEBCD.Nutr.REF.003.pdf>

Since deficient and excess iodine can result in the same symptoms and you’re unsure whether your horse is getting sufficient iodine, you may want your veterinarian to test for inorganic iodine level.



dressings, wound care—that may contain iodine, as it can be absorbed through the skin.

Other Symptoms of Iodine Toxicity or Deficiency

This micro-nutrient imbalance can also present with other symptoms for your horse.

- ◆ Hairless foals
- ◆ Dry flaky skin
- ◆ Thickened skin on the lower legs
- ◆ Dry dull hair
- ◆ Hair loss
- ◆ Low body temperature and cold intolerance
- ◆ Lethargic, dull, timid behavior

Use of Alternative and Natural Treatments as Iodine Levels Normalize

The most natural sources of iodine are seaweed and kelp. It’s important that the kelp/seaweed supplement you use has been tested for the iodine content, in order to prevent possible overdose. If you are feeding commercial feeds or supplements, be sure to add the iodine content of those products at the rate you are feeding into the total.

Some horses can be fed kelp “free choice” as they seem to eat only what they need. If your horse is insulin resistant and eats everything available, you may want to offer her only a daily ration by choice instead of top dressing or mixing the kelp with her concentrate.

The suggested daily dose for a 1,000-pound horse at maintenance is 1–6 mg iodine per day. One tablespoon iodized table salt contains 135 micrograms (0.135 mg) iodine. In order to get 1 mg iodine, your horse would have to consume 7.4 tablespoons, which would surely be more sodium than he needs or would probably tolerate.

Forage and water sometimes contain iodine. If you’re using municipal water, see if there are statistics for iodine levels. Well water can contain iodine, so be sure to get a test that includes iodine levels. Forage usually contains little or no iodine, but if your horse is affected by goiter, you may want to have your hay and/or pasture tested.

Applied kinesiology muscle testing can be used to determine whether a supplement or feed source will help or hurt your horse’s condition. This process is described in *Complete Holistic Care and Healing for Horses*.⁷

Balance is Key to a Healthy Horse

Macro- and micronutrients are vital to your horse’s overall health. The balance of these nutrients plays a large part in your horse’s soundness and stamina as well as athleticism. Before adding a supplement to your horse’s diet, make sure it is necessary. Your horse—and bank balance—will thank you. ◆

Jan Evans is a Reiki and Certified Equine/Small Animal Acupressure Practitioner. Her horse’s insulin resistance forced her to learn alternative therapies for treating her mare’s frequent bouts of laminitis. She offers acupressure and Reiki to animals in Southern Colorado. See www.COAnimalAcupressure.com. Jan is also a freelance sales and marketing writer specializing in Natural/Alternative Health markets. See www.HolisticHealthWriter.com.

REFERENCES 1. Eleanor Kellon, VMD *Equine Cushing’s and Insulin Resistance* 2008 Chapter 1 pg 3

2. Eleanor Kellon, VMD *Equine Cushing’s and Insulin Resistance* 2008 Chapter 1 pg 14

3. Karen Briggs, *Equine Nutrition* 2007 pg 89

4. Baker, H.J. and J.R. Lindsey. 1968. Equine goiter due to excess dietary iodine. *J. Am. Vet. Med. Assoc.* 153:1618.

5. Eleanor M. Kellon, VMD *Horse Journal™ Guide to Equine Supplements and Nutraceuticals* pg 126

6. <http://www.merckvetmanual.com/endocrine-system/the-thyroid-gland/non-neoplastic-enlargement-of-the-thyroid-gland#v4734086> By Janice E. Kritchevsky, VMD, MS, DACVIM, Professor, Large Animal Medicine, Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Purdue University

7. Mary L. Brennan, DVM *Complete Holistic Care and Healing for Horses* 2001 pg 148-150