



Merry Christmas

Happy Hannukah

Matunda ya Kwanza!

Happy New Year!



INFORMATION

HOW MUCH TAURINE IS NEEDED IN DOG FOOD?

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December 24th, 2011. In response to several inquiries about how much Taurine we recommend as a daily supplement, I reprint here a part of article "Coton Health Report: How Taurine Protects the Canine (and Human) Heart," by Robert Jay Russell, Ph.D., *Coton de Tulear News*, Fall/Winter 2009:

"People and small dogs are prone to a debilitating, often fatal heart condition called congestive heart failure, "CHF." This is a progressive enlargement of the heart as it struggles to propel blood throughout the body. The muscle thickens (primarily in the left ventricle), the heart enlarges and becomes less efficient in time.

In small dogs, CHF is the progressive result of the destruction of the heart valves. The valves lose their ability to close securely, essential to prevent back flow ("regurgitate") as the heart muscle contracts to push its fluids away from the heart.

The failure of the valves to close adequately can often be heard as a distinctive "click" and the regurgitation a swirl of fluid — a characteristic murmur that an experienced veterinarian can pinpoint using his/her stethoscope. Some veterinarians believe they can actually detect a growing bacterial vegetation coating a diseased valve by the sound the valve makes (see below).

Most commonly, the mitral valve of the heart is the valve that is damaged and that leads to progressive congestive heart failure. The destruction of the mitral valve has a clinical name, Mitral Valve Disease [MVD]. It impacts both dogs and humans. Each year many thousands of dogs succumb to this disease; more than 120,000 American humans suffer from it.

What Actually Damages the Heart Valves?

Bacteria are the most common culprits causing MVD. They favor the heart valves where they coat the valve like a colony of slime. In fact we have a name for this newly discovered, cooperative "super-organism." Colonies of social bacteria are called "biofilms." They act as a single unit, and render the mitral valve floppy and ineffective, allowing blood which should be moving in one direction — out from the heart and throughout the body — to flow back into the heart.

The heart attempts to compensate for its leaky mitral valve by pumping harder. The heart adds cardiac muscle until the walls of its ventricle thicken too much. In just a few years, the enlarged heart is less efficient at pumping than it has ever been. Congestive heart failure is then full blown.

The floppy mitral valve with its cargo of bacteria eventually fails altogether (mitral valve prolapse — "MVP"). Before it reaches that terminal state, humans have their diseased valves replaced by artificial valves, sometimes made from Gore-Tex. Dogs are not so lucky. There are no surgical valve replacements currently available for ailing small dogs.

The growing colony of bacterial biofilm originates from many possible sources including rheumatic heart disease and, critical for our dogs, dental disease.

Now that we have a basic understanding of what is the primary cause of heart disease that endangers our Coton's lives (valvular disease that leads to congestive heart failure), what can we do about it? Before we describe preventative care, we need to know what *specifically* causes the structure of the heart valve itself to fail. If we knew that, we might be able to not only help prevent valvular damage, we might actually be able to reverse it!

In that regard, an article that appeared this summer has provided a key piece of evidence. Researchers at Colorado State University have found that a neurotransmitter normally associated with the gut and brain — serotonin — is also produced by diseased heart valves. And the serotonin produced there destroys the valve. This is such an important finding that I have presented the *Colorado State University press release* detailing this research in a box on the next page.

In my opinion, this discovery could be one of the greatest discoveries in cardiac research this century. Furthermore, the discovery that damaged heart valves produce serotonin helps explain why the amino acid Taurine —that I have long advocated as a daily supplement for all dogs — works.

How Does Taurine Work to Protect the Heart?

Taurine is an unusual amino acid. More familiar amino acids are the building blocks proteins, and proteins form the basic structures of our bodies: the muscles, the blood cells, enzymes.

Taurine operates alone. It is produced in humans and dogs in the pancreas, and is secreted into the intestine along with bile. Taurine's activity within the body is diffuse and widespread. Taurine is found in the gut, in the brain (especially in the hippocampus, one of the most important pathways in arousal and memory) and around the heart within the heart's membranous protective sack called the "pericardium" [lit: "around the heart"].

Taurine is known to help mediate many physiological functions. It has been shown to aid in weight loss, nerve transmission, and it helps inhibit stress and aggression.

In the brain, taurine is an inhibitory neurotransmitter. That is, it acts to reduce or stop anxiety and even convulsions. Many Down's Syndrome children show an increased IQ when supplemented with taurine. Taurine acts (along with other neurotransmitters) to inhibit and modulate the

release of serotonin ([Glutamate, GABA, glycine and taurine modulate serotonin synthesis and release in Neurochem Int 23: 269-83. \(1993\)](#)). This, I believe, may be key to understanding how it protects the heart valves from their release of heart valve destructive serotonin.

An Essential Amino Acid?

For domestic cats and human infants and children, taurine is now considered an essential amino acid. It is considered a "conditionally essential" amino acid in adult humans. I believe it should be considered an essential amino acid for all humans.

An "essential amino acid" is one that should be acquired in the diet of the animal. That is, it is an amino acid which is either not synthesized (manufactured) or not adequately synthesized by the animal.

While adult humans and dogs synthesize taurine from cysteine and methionine, provided B6 and zinc are present, it is likely they do not synthesize enough. Moreover no studies have shown whether or not taurine synthesis declines with age or in disease. It probably does.

In fact, the pet food industry has begun to realize the need to add taurine to a dog's diet. Some high end dog foods now list taurine as an ingredient (check the package label). However, it is unlikely that sufficient amounts of taurine are present in any manufactured commercial dog food, hence I strongly advise adding a taurine supplement to the diet of your dog. Too much taurine is not toxic.

How much Taurine should you supplement?

Taurine is easy to acquire through a human vitamin store. Both Vitamin World and GNC Nutrition Stores, commonly found in shopping malls, stock taurine pills. They come in two sizes: 500 mg and 1,000 mg. Taurine is cheap: \$4~\$6 for 50 pills.

I have recommended previously that all dogs, puppies thorough seniors, should get 250 milligrams of taurine daily. It is should be added to wet food, although it can be given using a Greenies Pill Pocket or a dollop of Velveeta cheese or Braunschweiger.

It is best to buy the 500 mg pill size, then break the oblong pill in two. I crush the pill into a powder using an inexpensive mortar and pestle. These can often be purchased at Chinese dollar stores or at gourmet kitchenware stores. The powder can be easily sprinkled on to the dog's dinner.

While the 250 mg daily dose of taurine seemed reasonable at the time I suggested it, evidence is mounting that even more taurine daily may be

advisable. The latest edition of one of the most highly respected veterinary formularies, Donald C. Plumb's "*Plumb's Veterinary Drug Handbook, Sixth Edition*" (Blackwell Publishing, Ames, Iowa, 2008) added a section on taurine and says this about dosage:

"For taurine-deficiency related cardiomyopathy: In American Cocker Spaniels: give 500 mg taurine PO q12h with 1 gram of carnitine PO q12h."

Translated from the vet speak, that means for a dog with a slightly enlarged heart — or one with a heart murmur — "give 500 mg orally twice each day along with 1 gram of carnitine orally twice a day."

Therefore, it is *reasonable* to give a nonsymptomatic, healthy Coton de Tulear 250 mg of taurine once or even twice a day. For a symptomatic Coton de Tulear (coughing at rising in the morning; an enlarged heart, etc.), or one with a heart murmur of Grade II, administer the full recommended dose of 500 mg twice each day and add the carnitine as well. ..."

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IMPORTANT NOTICE: Discussions of Coton health are valuable in understanding your dog's welfare. However e-mail correspondence IS NEVER A REPLACEMENT for emergency consultation with a veterinarian or veterinary emergency clinic in instances where serious symptoms - especially sudden onset symptoms - are present. IF IN DOUBT - GO TO YOUR VETERINARY EMERGENCY FACILITY