

Taurine, Vital Neurotransmitter

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Taurine is often the forgotten amino acid, but this vital nutrient must become part of your supplement program. Taurine is now classified as a conditionally essential amino acid in the adult. In the developing brain the concentration of taurine is four times that of the adult brain. In infants and children taurine is an essential amino acid and must be obtained through the diet for normal brain development. Some scientists hypothesize that taurine deficiency may cause sudden infant death syndrome.

Taurine is a major inhibitory sulfur amino acid. Taurine's structure closely resembles the structure and metabolism of the inhibitory neurotransmitters GABA and glycine. Research demonstrates these substances are involved in the functions of the cerebral cortex, cerebellum, and hippocampus, spinal and retinal neurons. The body synthesizes taurine in the adult from cysteine and methionine, if B6 and zinc are present. Taurine is found throughout the body abundantly in the heart, skeletal muscles, mucous membranes lining the digestive tract, olfactory bulb, central nervous system and the brain – hippocampus and pineal gland. Taurine participates in a multitude of functions in the body involving the gallbladder, brain, eyes and vascular systems. The major route of excretion of taurine is via the kidneys.

In the heart taurine is the most concentrated amino acid. Taurine modulates heart muscle muscular contractility and rhythms. Taurine performs a part in calcium metabolism in the heart. Taurine affects the admission of calcium into the heart muscle cells where it is necessary for the nerve impulses (heart rhythms). Some studies suggest taurine may increase the survival rate and reduce the elevation of calcium content in both aorta and heart muscles. The regulation of calcium may prevent the progression of arteriosclerosis.

When the body has chronic stress, the concentration of taurine increases in the heart. After a heart attack the levels of taurine decrease dramatically; in some cases the levels drop to a third of normal. The loss of intracellular taurine may contribute to arrhythmias (abnormal heartbeats) where acute ischemia (low oxygen levels within the heart muscle) occurs. In Japan doctors are using taurine widely for all types of heart disease. When congestive heart failure occurs, the concentration of taurine increases as

the body tries to correct the problem. A Japanese double-blind study involved twenty-four congestive heart failure (CHF) patients. Patients were given four grams of taurine orally for one month. Nineteen of the twenty-four patients improved. Another double-blind crossover study involved fourteen patients. The patients were given six grams of taurine or a placebo in addition to conventional treatment in a randomized crossover study for four weeks, and a two-week wash out period in-between. Seventy-nine percent or eleven of the fourteen improved on taurine compared to twenty-one percent or three of fourteen on the placebo. While on the placebo, the heart failure scores did not change appreciably, but the heart failure scores decreased significantly while on taurine. Additionally, during the taurine administration, no patient worsened whereas four placebo patients did.

Taurine seems to act as a diuretic ridding the body of excess water and sodium. Taurine helps the failing heart by acting as a heart stimulator with doses of two grams per day. Whenever heart arrhythmias occur, the levels of magnesium and taurine drop dramatically. Replenishing both assists in controlling arrhythmias. Taurine helps prevent the decrease of potassium within the cells of the heart. Decreased potassium can cause electrical instability leading to heart arrhythmias.

Taurine protects and stabilizes the brain's fragile cell membranes. In the brain the site of greatest seizure activity researchers found low brain taurine concentrations. The levels of over half the amino acids are lower than normal, if epilepsy is present, but the levels of taurine are higher than normal in the body, but lower in the cerebrospinal fluid. Taurine has a potent, selective and long-lasting anti-convulsant action and proves effective in the treatment of epilepsy. The usual dosage for epilepsy is 1,000 milligrams three times daily taken with some carbohydrates such as fruit or other starchy vegetable or milk. As a word of caution, taurine should not be taken with aspirin or any salicylates.

In patients with tics, twitches or spastic conditions taurine proves helpful. In her book *Tired or Toxic?* Dr. Sherry Rogers reports the tics of Tourette's syndrome as abnormal firings of the nervous system. Research on Tourette's points to multiple triggers, but

taurine assists in reducing the tics. The usual dosage for tics is 1,000 milligrams twice to three times per day. With Tourette's syndrome supplementation with other amino acids and nutrients is extremely important. For more information about Tourette's read Dr. Sahley's Health Educator Report number 75. Research shows taurine helps reduce muscular spasms/rigidity in patients with muscular dystrophy.

In some patients with depression, a deficiency of taurine exists. If a depressed patient is environmentally sensitive, a taurine deficiency can compound chemical sensitivities and decrease the body's ability to detoxify chemicals.

Taurine is present in high concentrations of the retina of the eye. Patients with retinitis pigmentosa show decreased levels of taurine. No documented cases of blindness are attributed to taurine deficiency.

Taurine is necessary for the formation of one of the bile acids and for the proper functioning of the gallbladder. Taurine in doses of three to six grams in daily, divided, increases bile production that may prevent the formation of gallstones. Bile may be a route of excretion of chemicals detoxified by the body.

Stress depletes the body of taurine. Whenever you experience stress more than usual, chronically, or if you have an illness, the need for taurine increases. Chronic pain of any kind depletes the body of taurine. Often, supplementation is necessary, as the need for taurine is greater than what we can obtain from our diets. In over three hundred amino acid profiles done on patients at the Pain & Stress Center with wide ranging diagnoses from hyperactivity, pain, stress/anxiety to migraine headaches, ninety-nine percent showed a deficiency of taurine. In most cases, one to three grams of taurine supplementation was required daily. Since patients required large amounts of taurine, the Pain & Stress Center developed a 1,000-milligram capsule in bottles of 100 that is available through the Pain & Stress Center.

Our pets (domestic dogs and cats) need taurine too. Most pets are dependent on their diet for taurine, but taurine is often absent in commercially prepared foods. A deficiency of taurine causes degeneration of the retina of the eye that often leads to blindness. To

ensure your pet is obtaining enough taurine, supplement the diet part of the time with fresh meat (organ meats, liver, kidney, brains, heart) or fish. These foods are the best source of taurine.

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