



Taurine

Common Indications:

- Cardiovascular Disease
- Hypertension
- Heart Failure
- Obesity
- Epilepsy
- Liver Disease

General Comments:

One of the most abundant free amino acids in most animal tissues but virtually absent in plants.¹ The amino acid is mostly found concentrated in the heart, retina, spleen, bone marrow, platelets, and leukocytes.² One of the ways that taurine is synthesized is through methionine metabolism as an end product and also through the cysteine sulfinic metabolic pathway.³ Dietary taurine is found preformed in considerable quantities in meat, fish, and seafood and daily intake can be 40-400mg/day.⁴⁻⁶ This amino acid can become conditionally essential in times of malnourishment and malabsorption.

Benefits & Mechanism of Action:

Cardiovascular Disease

Studies have found reduced CVD risk from supplementary taurine intake alone or in combination with omega-3 polyunsaturated fatty acids.^{7,8} Studies have also found that urinary taurine excretion was the most significant single factor to correlate inversely with ischemic heart disease mortality.^{9,10}

Hypertension

In a randomized controlled study of 31 borderline hypertensive adults and normal adults, 6g taurine was given daily for 7 days; although the normal subjects did not experience any effects, the intervention group experienced a significant decrease in blood pressure and serum catecholamines.¹¹

Heart Failure

Patients who are afflicted with CHF often have suboptimal taurine levels, together with impaired myocardial energy production, myocyte calcium overload, and increased oxidative stress. Oral

taurine supplementation (2g BID) improves left ventricular function in people with heart failure (NYHA Class II-IV). The study of 24 patients found that treatment was effective in 19 of the 24 patients after 4-8 weeks of active treatment. Also, 13 of the 15 patients who were designated as NYHA III or IV before receiving taurine were able to be designated as NYHA II after they completed the study.¹²

Obesity

In a small random controlled trial, 15 healthy overweight adults were treated with 3g taurine per day for 7 weeks. This resulted in a significant decrease in serum triglycerides, although there was no change in HDL or fasting glucose.¹³ In another study, 30 overweight or obese non-diabetic young subjects were given taurine supplementation (1g TID) over a 7-week period resulted in a beneficial effect on lipid metabolism and a decrease in body weight.¹⁴

Epilepsy

The optimal dose of taurine supplementation in the management of epilepsy may be in the range of 100-500mg/day.¹⁵ This study noted a loss of antiseizure activity in some patients when the dose was increased to above 1.5g/day and they found that the beneficial effects were short-lasting and not maintained beyond a few weeks.

Liver Disease

Taurine supplementation has been reported to ameliorate liver injury and improve liver function. In a small study of 24 patients with chronic hepatitis, 12 patients (Age: 46-75 years) were given 2g of taurine TID for 3 months, and then treatment was stopped for 1 month and the other 12 patients were given placebo. The supplementation resulted in a significant decrease in ALT and AST.¹⁶

Eye Function/Health

All ocular tissues contain taurine, which is critical for photoreceptor development in the retina and act as a cytoprotectant against stress-related neuronal damage and other pathological conditions.¹⁷

Neuroprotective

Taurine has been shown to prevent mitochondrial dysfunction in neurons and to protect against endoplasmic reticulum stress associated with neurological disorders.¹⁸

Bile Acid Conjugation

Taurine has a well-defined role in bile acid conjugation. Taurine is preferentially conjugated with bile acids in the liver, thus forming predominantly taurocholic acid, prior to excretion in the bile.¹

Exercise and Sport

A number of small studies have reported that taurine supplementation may be useful for exercise

performance and/or reducing muscle soreness and damage. Further research needs to be conducted to find more significance however it is for this reason why taurine is incorporated in a number of sports drinks. A study of 21 male participants reported that 14 days of supplementation resulted in less muscle damage and better performance after eccentric exercise.¹⁹

Dose:

- Adult: 500mg-3g PO daily in divided doses
- Pediatric: 250mg-1g PO daily in divided doses

Signs/Symptoms of Deficiency:¹⁷

- Cardiomyopathy
- Renal Dysfunction
- Developmental abnormalities
- Pancreatic β -cell malfunction
- Damaged retinal neurons

Cautions & Side Effects:

Appears to be safe even at higher doses in both adults and children. However, adverse effects have been seen in select patient populations.

- Temporary Itching in psoriasis patients at high dose²⁰
- Nausea, headache, dizziness, and gait disturbances in epileptic patients at high dose²¹

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General Comments

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