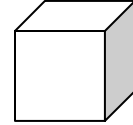


MONTIFF INC

Don Tyson's Advanced Nutraceuticals



PURE L-THREONINE

Threonine, an essential amino acid, is necessary to maintain proper balance of protein in the body, aids in the formation of collagen and elastin, is important for lipotropic and central nervous function, and may be beneficial in providing biochemical support for ALS patients.

RECOMMENDED TO ENHANCE STRUCTURE & FUNCTION RELATING TO NUTRITIONAL NEEDS AND DEFICIENCIES PERTAINING TO:

- Maintaining proper protein balance
- Lipotropic action
- Central nervous system function
- Formation of collagen and elastin
- Nutritional support for ALS and MS patients

WHAT IS THREONINE?

Threonine is an essential amino acid and must be obtained through food source or supplementation, since the body cannot synthesize it. It was the last amino acid identified in 1935, when it was determined to be a necessary component of protein biosynthesis and must be provided in the diet daily. Because of the importance of Threonine, it is included in Montiffs All-Basic, Gluca-Balance and Super-Sports Amino Acid Formulas. Only a small amount of Threonine is found in grains, therefore, Vegetarians and those on low protein diets may be deficient in this amino acid, which is important for the Krebs' cycle and proper protein balance and function. **Deficiencies may also result in irritability.** Threonine has lipotropic functions and **helps prevent a fatty buildup in the liver.** It may have a beneficial effect on fatty livers, which result from low protein diets, and Methionine and Aspartic Acid have an effect on Threonine's role in this action. Threonine, which is a precursor for Glycine, is also found in the heart, skeletal muscle and central nervous system. By aiding in the production of antibodies, **it enhances the immune system**, and it may also be beneficial to those with ALS and MS.

THREONINE AND ALS (Amyotrophic Lateral Sclerosis or Lou Gherig's Disease) WHAT IS ALS ?

Amyotrophic Lateral Sclerosis (ALS) is a neurological and fatal disease affecting muscle control and exhibited by progressive symptoms, including muscle weakness, atrophy, cramps, spasticity, and difficulty in swallowing and speaking. It is also known as **Lou Gherig's Disease**, because this famous N.Y. Yankee first baseman contracted and succumbed to this debilitating neuro-muscular disease in 1941. ALS affects over 4000 people in the US yearly, and usually presents in people between the ages of 40 and 70. Death generally occurs 2-4 years after the onset, although 10% live over 5 years and 5% live 10 years or longer. In 1993 a faulty gene was identified as the apparent cause in some cases. This was linked to free radical damage, causing a degeneration of an enzyme, superoxide dismutase. In other cases, it may be due to a genetic propensity causing a metabolic defect in the central nervous system affecting the motor neurons. Excessive excitatory amino acids, especially aspartate and glutamate have been noted, while a decrease in Glycine in the central nervous system has also been measured. Increasing Glycine levels in the CNS has been theorized to be beneficial; however, administering Glycine is ineffective, since it does not cross into the central nervous system. Since Threonine is a precursor to Glycine, and may cross into the CNS, supplementation of Threonine may be effective in reducing some symptoms. Pyridoxal 5'Phosphate is necessary for the conversion of Threonine to Glycine.

THREONINE AND ITS EFFECT ON ALS

- Dr. B. Patten, at Baylor Univ. College of Med., 1988, administered between 2-4 grams of Threonine to 15 patients daily for 10 months. Improvement occurred within 48 hours of treatment, including better voice, less drooling, decreased fasciculations, increased energy and swallowing and decreased spasticity. Of the 15 patients studied, 7 made definite improvements, 3 made minor improvements, and 5 remained unchanged. The greater the severity of symptoms of these

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patients, the more dramatic the improvements were noted. Some researchers have subsequently studied Threonine with varied and sometimes inconclusive results.

- Threonine supplementation appears to be most effective when given before significant neuronal damage occurs. Since active B-6 is necessary to convert Threonine to Glycine, Pyridoxal 5'Phosphate is suggested, and a B complex in a capsule with P 5'P would be recommended (the contents may be emptied and mixed in a drink or easily consumed foods, if necessary). Also high quality, pure Threonine should be taken in encapsulated form, or powder for easier swallowing. Threonine should not be taken with protein or competitive amino acids such as Tyrosine, Phenylalanine, Tryptophan, Alanine and Serine, as well as the branched-chain amino acids, Leucine, Isoleucine, Valine, since they may inhibit the uptake of Threonine into the brain.
- MULTIPLE SCLEROSIS (MS) is another neuro-muscular disease that Threonine may have an effect on. In double crossover study at Mass. Gen. Hospital, 1992, a dose of 7.5 grams daily was administered to 26 MS patients who showed a decrease of spasticity.

A SUGGESTED PROTOCOL FOR ALS PATIENTS

Since there are no known cures or effective medications for ALS, the use of Threonine, as well as other nutrients may be beneficial in reducing some of the debilitating symptoms in some patients, while increasing the quality of life. The studies thus far have been varied and inconclusive; however the quality of the Threonine, dose, precursors and use of antioxidants may effect the results. The following is a suggested protocol.

- THREONINE 2-4 grams twice daily in capsules or powder mixed in a fruit drink or easily consumed food , such as applesauce (not protein).
- B-COMPLETE - B complex in a capsule 1 capsule three times daily with food (or contents mixed in fruit juice etc.).
- SUPER ANTIOXIDANT - 2-3 capsules (or contents mixed as above) three times daily. ALPHA LIPOIC ACID PLUS - 1-2 three capsules two times daily.
- SUPER E PLUS - 2 soft gels three times daily.
- PURE EFA (Essential fatty acids to protect the myelin integrity of the nerve fibers, which may become damaged in ALS) 2-3 soft gels three times daily.

DIRECTIONS: Take 1-2 capsules per day with water or fruit juice.

B-6 is necessary for proper metabolism, and Montiff B Complete is recommended. For ALS patients the recommended dosage is 2-4 grams (4-8 capsules) twice daily - or powder equivalent of 1/4th tsp. per capsule, along with other nutrients. Threonine is included in Montiffs All-Basic, Super Sports and Gluca Balance Amino Acid formulas to support proper daily protein balance.

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