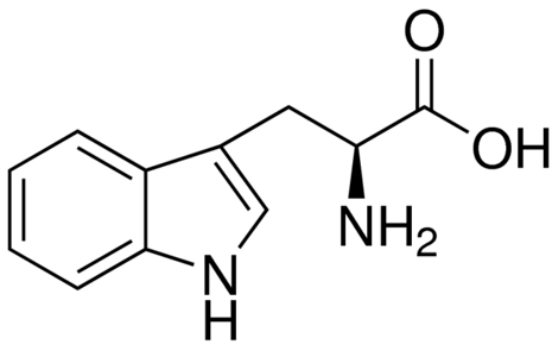


L-Tryptophan 500 mg – 120 Veg Capsules

TECHNICAL SUMMARY

L-Tryptophan is an essential amino acid; therefore, it is not synthesized by the body and must be obtained from the diet. In the brain, tryptophan is converted into serotonin, a neurotransmitter involved in feelings of well-being, calmness, personal security, and relaxation.* It also plays a role in the regulation of appetite and synchronization of sleep patterns.* Every lot of Protocol For Life Balance® L-Tryptophan is tested to be free of Peak E and microbial contamination.

Structure formula:



Chemical name: 2-amino-3-indolylpropanoic acid

Allergen and Additive Disclosure: Not manufactured with wheat, gluten, soy, milk, egg, fish, shellfish, tree nut or sesame ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Vegetable Capsules

ROLE AS NUTRIENT/FUNCTION

As an amino acid, tryptophan's primary role is contributing to protein synthesis.* Upon transport across the blood-brain barrier, this essential amino acid plays an important role in indirectly regulating neurological pathways including those controlling sleep and mood.* This regulation is accomplished through synthesis of indolamines including serotonin, melatonin, tryptamine and nicotinamide.* Regulation of the synthesis of these neurotransmitters contributes to the support of healthy sleep and mood.* Tryptophan also undergoes metabolism to kynurenine, which protects the eye from UV damage and is also known to help protect against deterioration of the eye due to aging.*

NATUROKINETICS®

Liberation: Disintegration of the vegetable capsule is tested in water using a USP testing method with disintegration measured between zero and 60 minutes.

Absorption: Supplemental tryptophan is absorbed in the intestines via two distinct active transport mechanisms: Na⁺-dependent mechanism in the apical membrane of the gut and TAT1 transport located in the basolateral epithelium. Due to its low affinity for transport molecule binding, as well as to its competition with other amino acids, absorption of tryptophan becomes the determining step for its metabolic pathway. At the

Supplement Facts

Serving Size 2 Veg Capsules Servings Per Container 60

Amount Per Serving

L-Tryptophan (Free-Form) (2-amino-3-indolylpropanoic acid)	1 g (1,000 mg)**
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** Daily Value not established.

Other ingredients: Hypromellose (cellulose capsule), Rice Flour, Ascorbyl Palmitate and Stearic Acid (vegetable source).

- Encourages Positive Mood*
- Supports Relaxation & Restful Sleep*

SUGGESTED USAGE: Take 1-2 capsules twice daily on an empty stomach, with final dose at bedtime, or as directed by your healthcare practitioner.

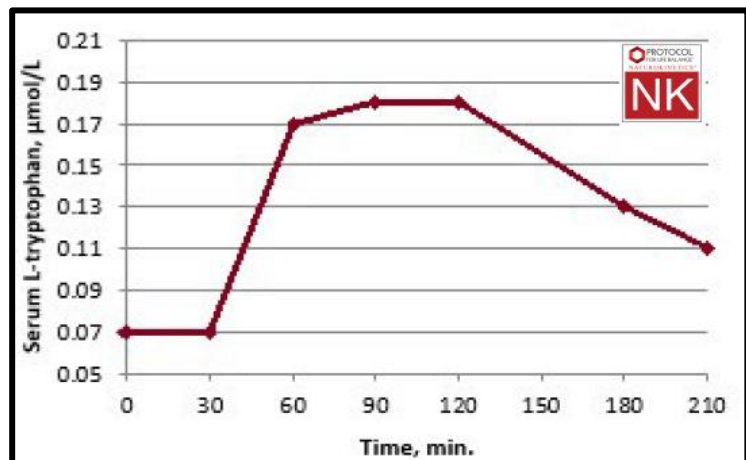


Figure 1. Mean serum concentrations following a single oral administration of L-tryptophan (0.8 g) in healthy adult volunteers.

pharmacokinetic study with healthy volunteers, a single oral administration of 0.8 g of L-tryptophan resulted in T_{max} of 60-120 min (Figure 1).

Distribution: Approximately 75-95 % of circulating tryptophan is bound to albumin. The non-bound, free tryptophan is available for transport across the blood-brain barrier. L-Tryptophan competes for transport across blood-brain barrier, it competes with other large neutral amino acids (histidine, isoleucine, leucine, methionine, phenylalanine, threonine, tyrosine, and valine).

Metabolism: Once tryptophan has crossed the blood-brain barrier, there are two primary metabolic pathways that tryptophan undergoes. The majority of tryptophan, approximately 90%, is metabolized via the kynurenine pathway which results in the formation of kynurenic acid (a glutamate receptor antagonist) and quinolinic acid (a glutamate receptor agonist). The second pathway is the indolamine formation of serotonin, nicotinamide, melatonin and other tryptamines, which are

neurotransmitters that are central to many neurological regulating pathways.

Elimination: Following ingestion, urinary tryptophan excretion is negligible. The major peripheral tryptophan metabolite kynurenine occurs in urine 4 hours following administration of tryptophan, and it is subject to reabsorption by renal tubules with a high degree of interindividual variation.

CLINICAL VALIDATION

- **Mood Support.*** In a double-blind, randomized, placebo-controlled clinical trial with 115 volunteers, L-tryptophan supplementation (1 g x 3 times/day for 12 weeks) was found to be effective in supporting mood and emotional well-being.* L-tryptophan supplementation resulted in significantly better results than placebo.* Additionally the results showed a significant decrease in negative behaviors, feeling, and perceptions, supporting the hypothesis that tryptophan can promote a more positive mood and enhance social interactions.*
- **Sleep Support.*** In a clinical trial with 15 volunteers complaining of difficulties falling asleep, L-tryptophan supplementation (1 g before bedtime) significantly reduced sleep latency from 26 min to 18 min.* Lower doses (0.25 g and 0.5 g) produced a trend in the same direction, but the differences were not statistically significant.*

SAFETY INFORMATION

Tolerability: L-Tryptophan may cause occasional gastrointestinal discomfort such as heartburn, discomfort, and nausea and in rare cases, headache, lightheadedness and drowsiness.

Contraindications: Not recommended for women who are pregnant or nursing.

INTERACTIONS

Drug Interactions: Combining with selective serotonin reuptake inhibitors (SSRIs), monoamine oxidase inhibitors (MAOIs) and/or sedatives (clonazepam, lorazepam, phenobarbital, zolpidem) might increase the risk of serotonergic side effects.

Supplement Interactions: Theoretically, L-tryptophan supplementation might result in drowsiness when taken with valerian root, yerba mate, kava kava, and may increase the serotonergic effects of 5-HTP, S-adenosylmethionine (SAME), and St. John's wort.

Interaction with Lab Tests: Not known outside of eosinophilia-myalgia syndrome (EMS), which is characterized by increase in eosinophil count and elevated liver enzymes.

STORAGE

Store in a cool, dry place in original sealed container.