

Theanine CalmAware™



CLINICAL APPLICATIONS

- Supports Subjective Feelings of Tranquility in Healthy People
- Support Healthy Neurotransmitter Levels
- Support Healthy Nervous System Function
- Support Healthy Cholesterol Metabolism
- Support Safety and Efficacy of Certain Chemotherapeutic Drugs
- Hepato-Protection

L-Theanine (N-ethyl-L-glutamine) is a naturally-occurring, biologically active, free-form amino acid that gives green tea its characteristic taste. 360 Medicine®'s Theanine CalmAware™ is Suntheanine®, protected by over 40 U.S. and international patents for its various physiological efficacies and L-isomer specific production processes. Although its notoriety is for its relaxation support; L-theanine also appears to display a neuropharmacology suggestive of a possible neuroprotective and cognitive-enhancing agent.

All 360 Medicine® Formulas Meet or Exceed cGMP quality Standards

DISCUSSION

The tea plant (*Camellia senensis*) synthesizes L-theanine in its roots and concentrates it in its leaves where it appears as a polyphenol. This water-soluble amino acid, discovered in 1949 was approved as a food additive in Japan in 1964. When consumed orally, theanine is absorbed in the small intestine and once in the plasma can be transported across the blood-brain barrier where it can act as an agonist or antagonist of some receptors. In rats, peak plasma was reached between 30 and 120 minutes. L-theanine undergoes enzymatic hydrolysis to glutamic acid and ethylamine in the kidneys where some re-absorption of its moieties appears to take place.¹

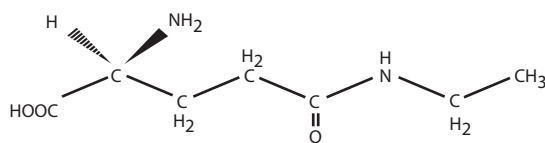
A pharmacokinetic study compared the D-, L- and D, L- forms of theanine. D- and L- theanine appeared to compete for intestinal absorption with orally-administered D-theanine having much poorer absorption. The kidney seemed to preferentially reabsorbed and metabolized L-Theanine; while D-theanine was preferentially excreted.² Five of the six products examined in a study at Iowa State University contained significant amounts of D-theanine. SunTheanine, the brand in 360 Medicine's formula was the only product that appeared to be purely the L-theanine enantiomer.³

Study of animal neurochemistry suggests L-theanine increases levels of serotonin, dopamine and GABA in the brain.⁴ Despite the similarity of the structure of L- theanine to that of glutamic acid, its mechanism of dopamine release differs from that of glutamate transporter blockers or glutamic acid. In fact, L-theanine apparently inhibits a variety of transporters that are able to carry glutamine across plasma membranes, favoring the modulation of the glutamate/glutamine cycle neurons required for the glutamate neurotransmitter pool in neurons. Glutamate levels are thus lowered by preventing transport of glutamate's precursor glutamine.⁵ Theanine may inhibit excitatory neurotransmission and cause inhibitory neurotransmission via glycine receptors.⁶ A double-blind, counter-balanced experiment documenting reduced heart rate and salivary IgA concluded L-theanine reduces psychological and physiological stress responses.⁷

Theanine appears to be hepatoprotectant, in part by inducing elevation of glutathione levels. The combination of ethanol and theanine decreased the ethanol blood levels one hour after administration compared to ethanol alone. Theanine increased liver alcohol dehydrogenase and aldehyde dehydrogenase activities and controlled the elevation of cytochrome P450 (CYP) 2E1 activity. Three hours after a single administration of ethanol intake, lipid peroxide increased, however, theanine administration controlled the increase and in time, returned the level to normal.⁸



In combination with certain drug intervention, theanine appears to decrease adverse effects by inhibiting reduction of glutathione levels and helping the body recover levels of glutathione in normal tissue. Thus, peripheral damage by the drug is prevented without influencing the efficacy of the drug.⁹



Supplement Facts

Serving Size: 1 Capsule
Servings Per Container: 60

	Amount Per Serving	%Daily Value
L-Theanine	200 mg	**

** Daily Value not established.

Other Ingredients: Vegetable capsule (HPMC and water), cellulose and magnesium stearate.

DOSING:

For relaxation: One capsule, twice to three times daily between meals. However, 2-4 capsules, three times a day can be used safely.

REFERENCES

1. Unno T, et al. Metabolism of theanine, gamma-glutamylethylamide, in rats. *J Agric Food Chem.* 1999 Apr;47(4):1593-6. [PMID: 10564022]
 2. Desai MJ, et al. Pharmacokinetics of theanine enantiomers in rats. *Chirality.* 2005 Mar;17(3):154-62 [PMID: 15704209]
 3. Desai MJ, Armstrong DW. Analysis of derivatized and underivatized theanine enantiomers by high-performance liquid chromatography/atmospheric pressure ionization-mass spectrometry. *Rapid Commun Mass Spectrom.* 2004;18(3):251-6 [PMID:14755608]
 4. Yokogoshi H, et al. Effect of theanine, r-glutamylethylamide, on brain monoamines and striatal dopamine release in conscious rats. *Neurochem Res.* 1998 May;23(5):667-73 [PMID: 9566605]
 5. Kakuda T, et al. Theanine, an ingredient of green tea, inhibits [3H]glutamine transport in neurons and astroglia in rat brain. *Neurosci Res.* 2008 June;68(8): 1846 - 1856 [PMID: 18293419]
 6. Yokogoshi H, et al. Effect of theanine, r-glutamylethylamide, on brain monoamines and striatal dopamine release in conscious rats. *Nutr Neurosci.* 2005 Aug;8(4):219-26 [PMID: 16493792]
 7. Kimura K, et al. L-Theanine reduces psychological and physiological stress responses. *Biol Psychol.* 2007 Jan;74(1):39-45. [PMID: 16930802]
 8. Sadzuka Y, et al. Effects of theanine on alcohol metabolism and hepatic toxicity. *Biol Pharm Bull.* 2005 Sep;28(9):1702-6 [PMID: 16141543]
 9. Sadzuka Y, et al. Efficacy of theanine is connected with theanine metabolism by any enzyme, not only drug metabolizing enzymes. *Food Chem Toxicol.* 2006 Feb;44(2):286-92. [PMID: 16140449]
- Kimura KL-Theanine reduces psychological and physiological stress responses. *Biol Psychol.* 2007 Jan;74(1):39-45. Epub 2006 Aug 22 [PMID: 16930802]

CAUTION:

Consult a healthcare practitioner prior to use if you have or suspect you have a medical condition, are taking prescription drugs or if you are pregnant or lactating.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



360° Medicine