5-HTP
5-Hydroxytryptophan

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What is 5-HTP?
5-Hydroxytryptophan, made from the amino acid L-tryptophan with the help of vitamin B6, is a precursor to serotonin production. The amino acid tryptophan can be found naturally in protein foods such as turkey and milk. Serotonin is a very important neurotransmitter known as "the feel good hormone." In the central nervous system (CNS), serotonin has been implicated in the regulation of sleep, depression, anxiety, aggression, appetite, temperature, sexual behavior, and pain sensation.

Why Consider 5-HTP Supplementation?
All serotonin used by brain cells must be made within the neurons, since it cannot cross the blood-brain barrier. Therefore, the synthesis of serotonin is heavily dependent upon the availability of L-tryptophan within the CNS.

The production and transport of L-tryptophan from the bloodstream into the CNS can be compromised by several factors including stress, elevated cortisol levels, vitamin B6 deficiency, and even high dosages (above 2,000 mg) of L-tryptophan, which all stimulate the conversion of L-tryptophan to kynurenine, lowering serum tryptophan levels.

According to research, 5-HTP allows for weight loss without dieting, reduces appetite, reduces cravings for carbohydrates, improves mood, helps diabetics to stay on their diets, improves fibromyalgia symptoms, reduces frequency and severity of headaches and even helps protein digestion.

How Does 5-HTP Help Those with Diabetes Mellitus?
Diabetes is associated with depressed tryptophan levels and as a result, a higher incidence of depression. Diabetics also suffer from hyperphagia and carbohydrate cravings. In a study where 20 overweight patients with NIDDM were given 750 mg/day of 5-HTP or placebo for two weeks, daily energy intake decreased considerably. Carbohydrate and fat intake were both reduced. Body weight reduced as well without dietary restriction (Cangiano C, et al, J Obes Relat Metab Disor, 1998). The conclusion of this study states: “These data confirm the role of the serotonergic system in reducing energy intake, by predominantly inhibiting carbohydrate intake, and suggest that 5-HTP may be safely utilized to improve the compliance to dietary prescriptions in NIDDM.”

Is 5-HTP Safe?
While L-tryptophan is synthesized from bacteria, allowing for contamination, 5-HTP is made from the seeds of the African plant, Griffonia simplicifolia.

5-HTP is Well Absorbed
5-HTP is well absorbed from an oral dose, with about 70 percent ending up in the bloodstream. Absorption of 5-HTP is not affected by the presence of other amino acids; therefore, it may be taken with meals without reducing its effectiveness. Unlike LT, 5-HTP cannot be shunted into niacin or protein production.

Other neurotransmitters and CNS chemicals such as melatonin, dopamine, norepinephrine, and beta-endorphin have also been shown to increase following oral administration of 5-HTP. This ability to increase not only serotonin levels in the brain, but also dopamine and norepinephrine, allows 5-HTP to produce some significant and unique effects on brain chemistry and on serotonin-related conditions which other substances, including LT, cannot duplicate.
Research Studies

The effects of oral 5-hydroxytryptophan administration on feeding behavior in obese adult female subjects.

Int J Obes Relat Metab Disord 1998 Jul;22(7):648-54
- 19 obese females with BMIs between 30-40
- Double-blind crossover study
- Aimed to evaluate the effects of 5-HTP on feeding behavior, mood state and weight loss.

Eating behavior and adherence to dietary prescriptions in obese adult subjects treated with 5-hydroxytryptophan.


Purpose of study:
To verify whether adherence to dietary restriction could be improved by 5-HTP (900 mg/day) vs. a placebo

Study design:
- Double-blinded - 2 consecutive 6 week periods
- No dietary restriction first 6 weeks
- Calories were controlled in the second period

Studies show that 5-HTP’s effectiveness is comparable to SSRIs like Prozac.

Also gets results similar to the tricyclic antidepressants like Elavil.

- Primary fibromyalgia syndrome is characterized by general musculoskeletal aching, multiple tender points, fatigue, morning stiffness, and sleep disturbances.
- Fibromyalgia patients have been found to have low serotonin and tryptophan levels, and some studies have shown symptomatic improvement with the use of tricyclic and SSRI antidepressants.
- These findings suggest 5-HTP may be useful in the treatment of fibromyalgia.
- Clinical trials have demonstrated significant improvement in symptoms, including pain, morning stiffness, anxiety, and fatigue
- 5-HTP has been shown to be beneficial in treating insomnia, especially in improving sleep quality by increasing REM sleep.


The effect of serotonin on pepsin inhibition by duodenal fat.


Purpose of study:
To evaluate the possible role of serotonin on pepsin secretion

The results suggest that serotonin increases pepsin production as follows:
1. Reserpine is a drug that depletes serotonin stores and pretreatment with reserpine abolished the stimulatory effect of histamine on pepsin secretion.
2. Pretreatment with a serotonin blocking agent augmented the pepsin inhibition induced by the intraduodenal infusion of fat.
3. 5-hydroxytryptophan (serotonin precursor) caused a significant stimulation of pepsin secretion. The mode of action of serotonin is probably by a direct hormonal action on the gastric chief cells.

Behavioral, neuroendocrine and biochemical effects of different doses of 5-HTP in panic disorder

Eur Neuropsychopharmacol 1996 May;6(2):103-10

Purpose: To investigate the role of serotonin in the pathophysiology of panic disorder (PD)

- 7 patients suffering from PD and 7 healthy controls
- Received an IV challenge with 10 mg, 20 mg and 40 mg 5-HTP and placebo in random order on 4 different occasions
- Conclusion: “Stimulation of the serotonergic neuronal system by three different dosages of 5-HTP did not induce panic or anxiety in PD pts and healthy controls.”

For a list of references cited in this document, click the related research link

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