# 5-HTP SAP

*Science-based serotonin precursor for sleep support**

Depression and insomnia are two of the most prevalent concerns for which patients will seek medical treatment. 5-Hydroxytryptophan (5-HTP) is derived from the seed of *Griffonia simplicifolia*, and is a precursor needed for the synthesis of the neurotransmitter serotonin as well as for the neurohormone melatonin.[1] Serotonin is synthesized in the intestinal tract by the enteric cells as well as in the central nervous system.[1] Orally administered serotonin is not able to cross the blood-brain barrier, and therefore cannot enter the CNS.[1]* 5-HTP, however, is able to cross the blood-brain barrier, where it can then be utilized as a precursor to generate serotonin.* Serotonin plays a role in regulating mood, sleep, appetite, sexuality, body temperature, and aggression.[2]*

## SUPPLEMENT FACTS

**Serving Size:** 1 Capsule — **Servings:** 90

| | Amount Per Serving | % Daily Value |
|---|---|---|
| 5-HTP (L-5-hydroxytryptophan) | 50 mg or 100 mg | ** |

**Daily Value not established

**Other ingredients:** Vegetable magnesium stearate, silicon dioxide and microcrystalline cellulose in a vegetable capsule composed of vegetable hypromellose and purified water.

**This product is non-GMO and vegan friendly.**

**Contains no:** Gluten, soy, wheat, corn, eggs, dairy, preservatives, artificial flavour or colour, starch, or sugar.

Each bottle of **5-HTP SAP** contains 90 capsules.

## DIRECTIONS FOR USE

**Adults:** Take 1-2 capsules 3 times daily or as directed by your healthcare practitioner. Consult a healthcare practitioner for use beyond 1 year.

For some patients, 5-HTP can cause nausea, so it is recommended to start with 50 mg dosages for two weeks, and to adjust the dosage from there as recommended by your healthcare practitioner.

## INDICATIONS

**5-HTP SAP** is used as a precursor to serotonin and can be used for patients with a serotonin deficiency,* May be helpful to regulate sleep,* and can:

- Be used to support optimal mood balance.*
- Help children suffering with night terrors.*
- Be used to help alleviate the pain associated with fibromyalgia.*

## CAUTIONS AND WARNINGS

Some patients experience nausea or gastrointestinal upset and drowsiness when taking 5-HTP. If this occurs, please discuss dosing with your healthcare practitioner.

Please consult your healthcare practitioner before using this product if you are taking any medications or supplements that have serotonergic activity; these include many antidepressants, St. John's wort, L-tryptophan, cold medications containing the ingredient dextromethorphan, and some antimigraine medications.

**5-HTP SAP** should be used by women who are pregnant only under the guidance of their healthcare practitioner.

## PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for each **5-HTP SAP** lot number have been tested by a third-party laboratory for identity, potency, and purity.

*** 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.**


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351, Rue Joseph-Carrier, Vaudreuil-Dorion, Quebec, J7V 5V5
T 1 866 510 3123 • F 1 866 510 3130 • nfh.ca

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## 5-HTP AS PRECURSOR FOR SEROTONIN SYNTHESIS

5-Hydroxytryptophan (5-HTP) has been shown to help improve symptoms of depression, anxiety, insomnia, and somatic pain in a variety of patients.[1][2] 5-HTP is a precursor to serotonin, which is thought to be the mechanism of action as to how it helps treat these various conditions.[2] When tryptophan crosses the blood-brain barrier, it is taken up by serotonergic neurons.[2] Once inside the neurons, the enzyme tryptophan hydroxylase adds a hydroxyl group and produces 5-HTP, which is then decarboxylated to produce serotonin.[2] Serotonin is then stored in synaptic vesicles until it needs to be released to activate the receptors in the postsynaptic neurons.[1][2]

5-HTP is effectively absorbed in oral dosage form, with approximately 70% ending up in the bloodstream.[3] The other benefit to 5-HTP dosing is that it isn't affected by absorption of other amino acids, and can therefore be effectively taken with or without food.[3] The level of serotonin in the central nervous system (CNS) is highly dependent of the quantity of 5-HTP, which is easily able to cross the blood-brain barrier, unlike L-tryptophan, which requires transport molecules to enter the CNS.[3]

## 5-HTP AND DEPRESSION

A placebo-controlled, double-blind study was conducted with 60 patients diagnosed with depression. Patients received either fluvoxamine or 5-HTP orally three times daily for 6 weeks.[4] Symptoms monitored included mood, anxiety, insomnia, and somatic pain, and researchers found that improvements were equivalent in both groups.[4] Adverse side effects, however, were documented to be higher in the fluvoxamine group.[4] Several other studies have demonstrated that patients with both unipolar or bipolar depressions have demonstrated a positive clinical response at doses of 50–300 mg/d within two to four weeks.[5]

## 5-HTP AND FIBROMYALGIA

In a study assessing the efficacy and tolerability of 5-HTP, researchers conducted a 90-day open-label study with 50 patients who had been diagnosed with primary fibromyalgia syndrome.[6] Symptoms—including the number of tender points and pain intensity as well as anxiety, quality of sleep, and fatigue—were monitored.[6] All symptoms showed significant improvement over baseline, with the average clinical improvement being 50% during the treatment period.[6] 30% of patients reported side effects; however, one patient withdrew from the study.

## 5-HTP AND INSOMNIA

In a randomized, double-blind, placebo-controlled study, researchers examined the use of a combination formula including 5-HTP and GABA, compared to placebo.[7] Sleep latency and duration were measured via questionnaire, and sleep quality was measured via 24-h electrocardiographic recording.[7] Researchers found that the treatment group demonstrated a statistically significant improvement in all areas measured compared to the placebo group, including a reduction in time to fall asleep, decreased sleep latency, and improvement in both the duration of and quality of sleep.[7]

In a review of studies examining 5-HTP in the treatment of sleep disorders, researchers have found that 5-HTP does increase the length of patients' REM sleep.[3] Effective doses varied from 200 mg to 600 mg to achieve maximum benefit.[3] At higher doses, some patients reported extremely vivid dreams or nightmares.[3]

In a rat study, researchers found that insomnia induced by administration of parachlorophenylalanine (a serotonin synthesis inhibitor) was reversed by an injection of 5-HTP and an aromatic L-amino acid decarboxylase inhibitor.[8] Researchers found that 5-HTP injection did not increase cerebral 5-HTP concentrations, indicating that the ability of 5-HTP to restore sleep may be mediated by a more central action of 5-HTP.[8]

## 5-HTP AND SLEEP TERRORS

A placebo-controlled trial was conducted testing the effectiveness of 5-HTP in children with sleep terrors. In the treatment group, 5-HTP was administered at a dose of 2 mg/kg/d at bedtime.[9] All participants had complete medical sleep history taken, as well as neurological exams and EEG recordings while awake and during sleep.[9] After treatment for 1 month, 93.5% (29/31) of patients showed a positive response, in comparison to only 28.6% in the placebo group.[9] After 6 months of treatment, 83.9% of children treated were sleep terror–free.[9] Researchers concluded that 5-HTP is able to modulate the arousal level in children and can induce a long-term improvement of sleep terrors.[9]

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# 5-HTP SAP

*Science-based serotonin precursor for sleep support**

## INDICATION-SPECIFIC DOSAGE SUMMARY BASED ON HUMAN CLINICAL RESEARCH#

#Please note these suggestions are guidelines based on the clinical studies. Evidence for efficacy and safety has been qualitatively (study quality in terms of study design, sample size, appropriate methods of analysis, use of appropriate placebo/control, bias etc) assessed and has been rated using a 5 star ★ rating classification.

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| Indication | Suggested dosage | | Supporting evidence and study outcomes | Study design | Outcome measures/selection criteria for studies | Safety | Evidence quality rating |
|---|---|---|---|---|---|---|---|
| | 50 Mg | 100 Mg | | | | | |
| **Depression** | | | | | | | |
| First-episode depression[1] | 4 capsules/day for 2 weeks, 6 capsules/day in 3rd week, 8 capsules/day for 4-8 weeks | 2 capsules/day for 2 weeks, 3 capsules/day in 3rd week, 4 capsules/day for 4-8 weeks | Significant and nearly equal reduction rate with 5-HTP or fluoxetine treatment. 73.33% patients in 5-HTP group showed positive response* | Randomized, double-blind, parallel study, comparing 5-HTP with fluoxetine (n=70, 8 weeks) dose/day - 150 mg 2 weeks, 300 mg 3rd week, 400 mg 4-8 weeks | Hamilton depression scale (HAM-D), Clinical Global Impression (CGI) scale | 60% reported adverse events, not statistically significant. Adverse events - nausea, anorexia, headache | ★★★★★ |
| Depression in Parkinson's disease[2] | 1 capsule/day | 1 capsule/ day (desired effect would be seen with ½ capsule, according to study) | Significant difference in depression symptoms* | Randomized, double-blind placebo-controlled cross-over study (n=25, 5-HTP or placebo for 4 weeks) 50 mg/ day dose | Beck Depression Inventory (BDI-II), Hamilton Depression Rating Scale (HDRS21), Apathy Scale (AS) scores. Unified Parkinson's Disease Rating Scale (UPDRS) | No adverse effects | ★★★★★ |
| Depression[3] | 6 capsules/day | 3 capsules/day | Improved depression scores with 5-HTP treatment compared with clomipramine or placebo alone* | Randomized, double-blind placebo-controlled (n=26, 28 days) 300 mg/day 5-HTP + 50 mg/day clomipramine vs 50 mg/day clomipramine vs placebo | Hamilton Rating Scale for Depression (HRSD), Zung Depression Status Inventory (ZDSI), Clinical Global Impression (CGI) | No adverse effects | ★★★★★ |
| **Headache** | | | | | | | |
| Chronic tension headache[4] | 6 capsules/day | 3 capsules/day | Decrease in use of analgesics and reduction in days with headache post-treatment* | Randomized, parallel, double-blind, placebo-controlled trial (n=78, 8 weeks) dose 300 mg/day | Self-reported headache severity, relief, use of analgesics, adverse events | 8 patients with adverse events - epigastric pain, increase of serum transaminases, uterine bleeding, urticaria, allergy | ★★★★ |
| Headache[5] | 2 capsules/day | 1 capsule/day | Decrease in migraine scores* | Randomized, double-blind cross-over placebo-controlled, 5-HTP or placebo (n=30, 12 weeks. mean age 10.38 yrs) dose 100 mg/day | Migraine index measuring severity, duration, and frequency of attacks | Not reported | ★★★★ |
| Chronic primary headache[6] | 8 capsules/day | 4 capsules/day | >50% average reduction in headache symptoms seen in 48% of the cases* | double-blind cross-over, placebo-controlled (n=31, 2 months) 5-HTP 400 mg/day dose | Severity and frequency of headaches measured | Mild and transient side effects. No adverse effects | ★★★ |
| **Dyskinesia in Parkinson's** | | | | | | | |
| Levodopa-induced dyskinesia in Parkinson's disease[7] | 1 capsule/day | 1 capsule/ day (desired effect would be seen with ½ capsule, according to study) | Significant improvement in levodopa-induced dyskinesia symptoms* | Randomized, double-blind placebo-controlled cross-over (n=12, 5-HTP or placebo for 4 weeks) 50 mg/day dose | Unified Parkinson's Disease Rating Scale (UPDRS, Part III, Unified Dyskinesia Rating Scale (UDysRS), Wearing-Off Questionnaire (WOQ-19) | No adverse effects | ★★★★★ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Fibromyalgia** | | | | | | | |
| Fibromyalgia[8] | 6 capsules/day | 3 capsules/day | Improvement of all clinical evaluation criteria - pain intensity, sleep, fatigue, morning stiffness* | Randomized, double-blind placebo-controlled (n=50, 30 days), 300 mg/day | Clinical evaluation - palpation of 14 specific points, pain intensity and quality of sleep, fatigue and morning stiffness with visual analogue scale | Mild and transient side effects. No adverse effects | ★★★★★ |
| **Sleep Terrors** | | | | | | | |
| Sleep terrors[9] | 2 mg/kg/day (dose to be calculated based on child's body weight) | 2 mg/kg/day (dose to be calculated based on child's body weight) | 93.5% patients showed positive response.* Episodes disappeared in 4 children after 1 month and 83.9% of children were sleep terror free after 6 months* | Randomized, open trial (n=45, age 3.2-10.6 yrs, 20 days) dose - 2 mg/kg/day | Sleep history and structured sleep diary of 2 months, neurological examination + structured interview | No adverse effects | ★★★ |
| **Sleep** | | | | | | | |
| Sleep latency in older adults[10] | 2 capsules/day | 1 capsule/day | Reduced sleep latency for up to 8 weeks, but prolonged effects were not observed* | Single-blinded, 12-week parallel randomized controlled study in 20 older adults (67 ± 4 years) and dosage of 100 mg/day | Sleep quality data via both subjective and objective measures such as Pittsburgh Sleep Quality Index (PSQI) questionnaire and actigraphy watch. A global sleep score (GSS) was obtained from the PSQI | None reported | ★★ |
| REM sleep behavior disorder (RBD) in Parkinson's disease (PD) patients[11] | 1 capsule/day | ½ capsule/day | Increase in total percentage of REM sleep stage* | Single-center, randomized, double-blind placebo-controlled cross-over study with 36 PD patients for 16 weeks | RBD diagnosis was made according to the International Classification of Sleep Disorders third edition (ICSD-3) including a full-night video-polysomnography (v-PSG) | None reported | ★★★ |
| **Food Intake and Appetite Control** | | | | | | | |
| Energy and carbohydrate intake in non-insulin-dependent diabetic (NIDDM) patients[12] | Suggest 5 HTP SAP 100 mg version for ease of compliance | 7-8 capsules per day | Decreased daily energy intake and body weight by reducing carbohydrate and fat intake* | Double-blind, placebo-controlled study in 20 overweight NIDDM patients, 5-HTP (750 mg/d) or placebo for two consecutive weeks | Energy intake and eating behavior evaluated using a daily diet diary. Plasma amino acid concentrations and body weight, as well as serum glucose, insulin and HBA1C were assessed | Nausea in the first week of treatment and less frequent during the second week | ★★★★ |
| Energy and carbohydrate intake in obese individuals[13] | Suggest 5 HTP SAP 100 mg version for ease of compliance | 9 capsules per day (3 capsules 3 times daily before meals) | Reduction in carbohydrate intake and body weight with consistent presence of early satiety* | Double-blind, placebo-controlled study in 20 obese individuals, 5-HTP (900 mg/d) or placebo for two consecutive 6- week period | Energy intake and eating behavior evaluated every 2 weeks by using a 3-day diet diary | Nausea during the first study period and less frequent during the second study period | ★★★ |

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