

5-HTP for Improved Sleep, Mood and Weight Loss

Yadu Moharir, Ph.D.
Nutritional Consultants Unlimited, Inc.

5-hydroxy-L-tryptophan (5-HTP) is derived from the amino acid tryptophan. The molecules of 5-HTP are small enough to pass from the bloodstream into the brain. In the brain, 5-HTP is converted to serotonin, an important neurotransmitter. Supplemental 5-HTP is extracted from the seeds of *Griffonia simplicifolia*, an African plant.

Vitamin B6 is an important cofactor for the conversion of 5-HTP to serotonin; however, this conversion must occur at the junction of neurotransmitters because after this conversion is complete, serotonin cannot cross the blood brain barrier (BBB) and thus must be eliminated by the kidneys.

There are many scientific citations that document the relationship between 5-HTP and improved sleep and mood, and its positive effect on weight loss. Some of those papers are cited below:

References:

1. 5-hydroxytryptophan (5-hydroxy-L-tryptophan, L-5-hydroxytryptophan, oxitriptan).
Tracy, Timothy S.; Cupp, Melanie Johns; Bowers, Kerry; Eds; Cupp, Melanie Johns; Tracy, Timothy S.;
MONOGRAPH TITLE- Forensic Science and Medicine. Dietary supplements: Toxicology and clinical pharmacology; 2003; PP 267-275
2. Increased avoidance responding produced by REM sleep deprivation or serotonin depletion via PCPA is reversed by administration of 5-HTP
Smith, R. L.; Kennedy, C. H.; *Society for Neuroscience Abstracts*; **27(2)**; 2001; PP 1987
3. Extracellular serotonin variations during vigilance states in the preoptic area of rats: A microdialysis study.
Python, Agathe; de Saint Hilaire, Zara; Mikolajewski, Richard; Nicolaidis, Stylianos; Steimer, Thierry; *Brain Research*; **910(1-2)**; 10 August 2001; PP 49-54
4. Serotonergic activation alters interleukin-1 (IL-1) beta mRNA expression in the rat brain.
Opp, M. R.; Gemma, C.; Imeri, L.; *Society for Neuroscience Abstracts*; **26(1-2)**; 2000; PP Abstract No. -442.1
5. Treatment of night terrors in children with 5-hydroxytryptophan
Verrillo, E.; Ottaviano, S.; Miano, S.; Bruni, O.; *Journal of Sleep Research*; **9(Suppl 1)**; September 2000; P 28

6. Natural therapies for sleep disturbance
Cunningham, M; *America's Pharmacist (USA)*; **124(1)**; 2002; P 36
7. 5-Hydroxytryptophan: helpful or harmful?
Neal, C. P.; Swiger, E. K.; Goode, J. V.; Small, R. E.; *US Pharmacist (USA)*; **24(Oct.)**; 1999; PP 58, 62, 64, 67
8. Insomnia from parachlorophenylalanine administration: Reversal by peripheral or central injection of 5-hydroxytryptophan or serotonin
Petitjean, F.; Buda, C.; Janin, M.; Sallanon, M.; Jouvet, M.; *Sleep*; **8(1)**; 1985; PP 56-67
9. L-5-Hydroxytryptophan treatment of sleep terrors in children.
Bruni, Oliviero; Ferri, Raffaele; Miano, Silvia; Verrillo, Elisabetta; *European journal of pediatrics*; **163(7)**; July 2004; PP 402-407
10. Increases in avoidance responding produced by REM sleep deprivation or serotonin depletion are reversed by administration of 5-hydroxytryptophan
Smith, Randy L; Kennedy, Craig H; *Behavioural brain research*; **140(1-2)**; 18 March 2003; PP 81-86
11. Modulation of serotonergic projection from dorsal raphe nucleus to basolateral amygdala on sleep-waking cycle of rats.
Gao, Jun; Zhang, Jing-Xing; Xu, Tian-Le; *Brain research*; **945(1)**; 26 July 2002; PP 60-70
12. 5-Hydroxytryptophan, but not L-tryptophan, alters sleep and brain temperature in rats.
Imeri, L; Mancina, M; Bianchi, S; Opp, M R; *Neuroscience*; **95(2)**; 2000; PP 445-452
13. 5-hydroxytryptophan
Alternative medicine review: a journal of clinical therapeutic; **3(3)**; June 1998; PP 224-226
14. Abnormal serotonergic stimulation of cortisol production in obstructive sleep apnea.
Hudgel, D W; Gordon, E A; Meltzer, H Y; *American journal of respiratory and critical care medicine*; **152(1)**; July 1995; PP 186-192
15. The role of 5-hydroxytryptophan (5-HTP) in the regulation of the sleep/wake cycle in parachlorophenylalanine (p-CPA) pretreated rat: a multiple approach study.
Touret, M; Sarda, N; Gharib, A; Geffard, M; Jouvet, M; *Experimental brain research*; **86(1)**; 1991; PP 117-124

16. Current status, perspectives and limitations of serotonin precursors
Bovier, P; Dick, P; *Revue medicale de la Suisse romande*; **110(10)**; October 1990; PP 885-890
17. Double-blind study of 5-hydroxytryptophan versus placebo in the treatment of primary fibromyalgia syndrome.
Caruso, I; Sarzi Puttini, P; Cazzola, M; Azzolini, V; *The Journal of international medical research*; **18(3)**; May-June 1990; PP 201-209
18. Reversibility of para-chlorophenylalanine-induced insomnia by intrahypothalamic microinjection of L-5-hydroxytryptophan.
Denoyer, M; Sallanon, M; Kitahama, K; Aubert, C; Jouvet, M; *Neuroscience*; **28(1)**; 1989; PP 83-94
19. Indolamines and sleep: 5-HT or 5-HTP?
Jouvet, M; Touret, M; *Schweizerische Rundschau fur Medizin Praxis*; **77(34A)**; 23 August 1988; PP 6-9
20. Clinical studies of the effect of the serotonin precursor, L-5-hydroxytryptophan, on sleep disorders
Soulairac, A; Lambinet, H; *Schweizerische Rundschau fur Medizin Praxis*; **77(34A)**; 23 August 1988; PP 19-23
21. Possible involvement of central cholinergic-serotonergic interaction in natural sleep
Guha, M; Biswas, S; Poddar, M K; *Methods and findings in experimental and clinical pharmacology*; **10(4)**; April 1988; PP 243-245
22. Indications for L-5-hydroxytryptophan in neurology
Uldry, P A; Regli, F; *Revue medicale de la Suisse romande*; **107(9)**; September 1987; PP 703-707
23. Periodic leg movement, L-dopa, 5-hydroxytryptophan, and L-tryptophan.
Guilleminault, C; Mondini, S; Montplaisir, J; Mancuso, J; Cobasko, D; Dement, W C; *Sleep*; **10(4)**; August 1987; PP 393-397
24. Headache in association with sleep disorders in children: a psychodiagnostic evaluation and controlled clinical study--L-5-HTP versus placebo.
De Giorgis, G; Miletto, R; Iannuccelli, M; Camuffo, M; Scerni, S; *Drugs under experimental and clinical research*; **13(7)**; 1987; PP 425-433
25. Treatment for therapy-resistant depression.
Kielholz, P; *Psychopathology*; **19(Suppl 2)**; 1986; PP 194-200

26. Correction and amplification: cortisol response to 5-HTP
Meltzer, H Y; Umberke.man-Wiita, B; Robertson, A G; Tricou, B J; Lowy, M; *Archives of general psychiatry*; **43(8)**; August 1986; P 815
27. Influence of some agents that affect 5-hydroxytryptamine metabolism and receptors on nitrazepam-induced sleep in mice.
Wambebe, C; *British journal of pharmacology*; **84(1)**; January 1985; PP 185-191
28. Effect of 5-hydroxytryptophan on serum cortisol levels in major affective disorders. III. Effect of antidepressants and lithium carbonate.
Meltzer, H Y; Lowy, M; Robertson, A; Goodnick, P; Perline, R; *Archives of general psychiatry*; **41(4)**; April 1984; PP 391-397
29. Effect of 5-hydroxytryptophan on serum cortisol levels in major affective disorders. II. Relation to suicide, psychosis, and depressive symptoms.
Meltzer, H Y; Perline, R; Tricou, B J; Lowy, M; Robertson, A; *Archives of general psychiatry*; **41(4)**; April 1984; PP 379-387
30. Implication of hypothalamic structures in indolaminergic mechanisms of paradoxical sleep
Sallanon, M; Petitjean, F; Buda, C; Janin, M; Jouvret, M; *Comptes rendus des seances de l'Academie des sciences. Serie III, Sciences de la vie*; **297(11)**; 1983; PP 531-534
31. The effect of intravenous L-tryptophan on prolactin and growth hormone and mood in healthy subjects.
Charney, D S; Heninger, G R; Reinhard, J F; Sternberg, D E; Hafstead, K M; *Psychopharmacology*; **77(3)**; 1982; PP 217-222
32. Selective identification of indoleamine-containing neurons under particular pharmacological (PCPA, 5-HTP) and behavioral situations (sleep) (author's transl)
Petitjean, F; Touret, M; Buda, C; Janin, M; Salvert, D; Jouvret, M; Bobillier, P; *Journal de physiologie*; **77(2-3)**; 1981; PP 237-239
33. Severe post-traumatic insomnia treated with L-5-hydroxytryptophan.
Webb, M; Kirker, J G; *Lancet*; **1(8234)**; 20 June 1981; PP 1365-1366
34. Insomnia induced by P-chlorophenylalanine in cats. Its reversibility by intraventricular injections of indolamines
Petitjean, F; Buda, C; Janin, M; Sallanon, M; Jouvret, M; *Comptes rendus des seances de l'Academie des sciences. Serie D, Sciences naturelles*; **291(13)**; 15 December 1980; PP 1063-1066

35. Inversion of insomnia produced by para-chlorophenylalanine in the rat. Intraperitoneal and intraventricular administration of 5-hydroxytryptophan
Laguzzi, R F; Adrien, J; *Archives italiennes de biologie*; **118(2)**; May 1980; PP 109-123
36. Study on the effects of L-5HTP on the stages of sleep in man as evaluated by using sleep deprivation.
Nakazawa, Y; Hasuzawa, H; Kotorii, T; Ohkawa, T; Sakurada, H; Nonaka, K; Dainoson, K; *Folia psychiatrica et neurologica japonica*; **34(2)**; 1980; PP 83-87
37. Simultaneous improvement of mood and release of growth hormone by L-5-hydroxytryptophan (Ro 3-5940) in normal subjects (author's transl)
Wirz-Justice, A; Feer, H; Pesshringer, W; Graw, P; Lacoste, V; Gastpar, M; *Arzneimittel-Forschung*; **28(8)**; 1978; PP 1291-1292
38. Depression and serotonin metabolism
Mitsunobu, K; *Nippon Rinsho*; **36(1)**; 1978; PP 83-89
39. Effects of 5-hydroxytryptophan on fragmentation of REM sleep in alcoholics.
Zarcone, V P; Hoddes, E; *The American journal of psychiatry*; **132(1)**; January 1975; PP 74-76
40. Effect of 5-hydroxytryptophan, a serotonin precursor, on sleep disorders
Soullairac, A; Lambinet, H; *Annales medico-psychologiques*; **1(5)**; May 1977; PP 792-798
41. Clinical and polygraphic effects of d.l 5 HTP on narcolepsy-cataplexy.
Autret, A; Minz, M; Beillevaire, T; Degos, C; Cathala, H P; *Biomedicine*; **27(5)**; July 1977; PP 200-203
42. Intravenous L-5-hydroxytryptophan in normal subjects: an interdisciplinary precursor loading study. Part 1: Implications of reproducible mood elevation.
Pesshringer, W; Wirz-Justice, A; Graw, P; Lacoste, V; Gastpar, M; *Pharmakopsychiatr Neuropsychopharmakol*; **9(6)**; November 1976; PP 260-268
43. Human sleep and 5-HTP Effects of repeated high doses and of association with benserazide (RO.04.4602).
Autret, A; Minz, M; Bussel, B; Cathala, H P; Castaigne, P; *Electroencephalography and clinical neurophysiology*; **41(4)**; October 1976; PP 408-413
44. Proceedings: Effect of 5-hydroxy tryptophan on slow waves evoked by peripheral stimulation and in animals in a somniferous state
Takeshige, C; Ra, M; Sato, M; Shimizu, K; *Nippon Seirigaku Zasshi*; **36(8-9)**; 1 September 1974; PP 282

45. Letter: L 5-hydroxytryptophan and mood
Trimble, M; Chadwick, D; Reynolds, E H; Marsden, C D; *Lancet*; **1(7906)**; 8 March 1975; P 583
46. Case of agrypnia (4 months without sleep) in Morvan's disease. Favorable action of 5-hydroxytryptophan
Fischer-Perroudon, C; Mouret, J; Jouvet, M; *Electroencephalography and clinical neurophysiology*; **36(1)**; January 1974; PP 1-18
47. Effects of p-chlorophenylalanine and 5-hydroxytryptophan on sleep and central metabolism of monoamines and proteins of the cat
Bobillier, P; Froment, J L; Seguin, S; Jouvet, M; *Biochemical pharmacology*; **22(23)**; 1 December 1973; PP 3077-3090
48. Serotonin and behavior: a brief summary.
Aprison, M H; Hingtgen, J N; *Federation proceedings*; **31(1)**; January-February 1972; PP 121-129
49. Effects of Reserpine, Dopa and 5-HTP on the 2 sleep states
Matsumoto, J; Jouvet, M; *Comptes rendus des seances de la Societe de biologie et de ses filiales*; **158**; 1964; PP 2137-2140
50. Effects of 5-hydroxytryptophan on the sleep of normal human subjects.
Wyatt, R J; Zarcone, V; Engelman, K; Dement, W C; Snyder, F; Sjoerdsma, A; *Electroencephalography and clinical neurophysiology*; **30(6)**; June 1971; PP 505-509
51. 5-hydroxytryptophan and the sleep-wakefulness cycle in rabbits.
Tabushi, K; Himwich, H E; *Biological psychiatry*; **2(2)**; April 1970; PP 183-188
52. A little help from serotonin
Cowley, G.; Underwood, A.; Springen, K.; *Newsweek*; **131(1)**; December 29 – January 5, 1997-1998; PP 78, 80, 81
53. Non-pharmacologic treatment of obesity: Herbal aids to weight loss
Greenway, F. *International Journal of Obesity*; **26(Suppl. 1)**; August 2002; PP S185
54. 5-Hydroxytryptophan 5-HTP and eating behavior in non-insulin-dependent diabetic NIDDP
Cangiano, C.; Laviano, A.; Ceci, F.; Del Ben, M.; Angelico, F.; Conversano, R. C. L.; Muscaritoli, M.; Fanelli, F. R.; *Neuro endocrinology letters*; **14(4)**; 1992; P 274

55. Newer methods for weight loss
Lieberman, S; *Natural Pharmacy (USA)*; **8(4)**; 2004
56. Natural methods for accelerating weight loss - The low glycemic index diet, green tea, chromium, and 5-hydroxytryptophan
Lieberman, S; *Alternative & Complementary Therapies (England)*; **9(6)**; 2003; PP 307-311
57. 5-hydroxytryptophan: helpful or harmful?
Neal, C. P.; Swiger, E. K.; Goode, J. V.; Small, R. E.; *US Pharmacist (USA)*; **24(Oct.)**; 1999; PP 58, 62, 64, 67
58. A functional food product for the management of weight.
Bell, Stacey J; Goodrick, G Ken; *Critical reviews in food science and nutrition*; **42(2)**; March 2002; PP 163-78
59. 5-Hydroxytryptophan: a clinically-effective serotonin precursor.
Birdsall, T C; *Alternative medicine review: a journal of clinical therapeutic*; **3(4)**; August 1998; PP 271-280
60. Effects of oral 5-hydroxy-tryptophan on energy intake and macronutrient selection in non-insulin dependent diabetic patients.
Cangiano, C; Laviano, A; Del Ben, M; Preziosa, I; Angelico, F; Cascino, A; Rossi-Fanelli, F; *International journal of obesity and related metabolic disorders : journal of the International Association for the Study of Obesity*; **22(7)**; July 1998; PP 648-654.
61. 5-Hydroxytryptophan
Alternative medicine review: a journal of clinical therapeutic; **3(3)**; June 1998; PP 224-226
62. Effect of 5-hydroxytryptophan on the secretion of PRL, GH, TSH and cortisol in obesity
Martinelli, I; Mainini, E; Mazzi, C; *Minerva endocrinologica*; **17(3)**; July-September 1992; PP 121-126
63. Eating behavior and adherence to dietary prescriptions in obese adult subjects treated with 5-hydroxytryptophan
Cangiano, C; Ceci, F; Cascino, A; Del Ben, M; Laviano, A; Muscaritoli, M; Antonucci, F; Rossi-Fanelli, F; *The American journal of clinical nutrition*; **56(5)**; November 1992; PP 863-867

64. Effects of 5-hydroxytryptophan on eating behavior and adherence to dietary prescriptions in obese adult subjects.
Cangiano, C; Ceci, F; Cairella, M; Cascino, A; Del Ben, M; Laviano, A; Muscaritoli, M; Rossi-Fanelli, F; *Advances in experimental medicine and biology*; **294**; 1991; PP 591-593
65. 5-Hydroxytryptophan and carbidopa in spontaneously hypertensive rats.
Itskovitz, H D; Werber, J L; Sheridan, A M; Brewer, T F; Stier, C T; *Journal of hypertension*; **7(4)**; April 1989; PP 311-315
66. The effects of oral 5-hydroxytryptophan administration on feeding behavior in obese adult female subjects.
Ceci, F; Cangiano, C; Cairella, M; Cascino, A; Del Ben, M; Muscaritoli, M; Sibilia, L; Rossi Fanelli, F; *Journal of neural transmission*; **76(2)**; 1989; PP 109-117
67. Dissociation of the anorectic actions of 5-HTP and fenfluramine.
Fletcher, P J; Burton, M J; *Psychopharmacology*; **89(2)**; 1986; PP 216-220
68. Serotonin and appetite
Blundell, J E; *Neuropharmacology*; **23(12B)**; December 1984; PP 1537-1551
69. Kinetics of 5-hydroxytryptophan potentiation of glucose-induced insulin release.
Lindstrom, P; *Acta endocrinologica*; **106(2)**; June 1984; PP 248-253
70. Mechanisms underlying the effects of 5-hydroxytryptamine and 5-hydroxytryptophan in pancreatic islets. A proposed role for L-aromatic amino acid decarboxylase.
Lindstrom, P; Sehlin, J; *Endocrinology*; **112(4)**; PP 1524-1529
71. Opposite effects of 5-hydroxytryptophan and 5-hydroxytryptamine on the function of microdissected ob/ob-mouse pancreatic islets.
Lindstrom, P; Sehlin, J; *Diabetologia*; **24(1)**; January 1983; PP 52-57

Disclaimer: This document is prepared for educational purpose only and not intended to diagnose, treat, cure, or prevent any disease.