Relationship between the absorption of 5-hydroxytryptophan from an integrated diet, by means of Griffonia simplicifolia extract, and the effect on satiety in overweight females after oral spray administration.

Rondanelli M, Opizzi A, Faliva M, Bucci M, Perna S.

Abstract

The management of overweight may include the use of dietary supplements targeted to counter the feeling of hunger. A randomized, double-blind, placebo-controlled trial has been performed in 20 overweight females. These subjects were randomly assigned to supplement their diet with either an extract from Griffonia Simplicifolia (10 subjects) or a placebo (10 matched subjects) for 4-weeks, in conjunction with a personalised reduced calorie diet. The main aim of this study was to evaluate the efficacy, by the assessment of 24-h urinary 5-hydroxyindoleacetic acid levels (5-HIAA), of 1-month administration of a dietary supplement containing 5-hydroxytryptophan (5-HTP) from botanical extracts in healthy, overweight females. Secondary endpoints were the assessment of sensation of appetite (by Haber score), body composition, and severity of binge eating. The supplemented group had a significant increase of 24-h urinary 5-HIAA levels (p<0.001), and a decrease in Haber score (p<0.001) while the placebo group did not show significant changes. With regard to changes in body composition, statistically significant differences between the treatment groups were found for the mean change in BMI, suprailiac skinfold thicknesses, arm circumference and hip circumference. Other parameters were found to be similar in the treated and in the placebo groups. In conclusion, this study shows that the 5-hydroxytryptophan present in the Griffonia extract, administered via spray to the oral cavity, is adequately absorbed, as confirmed by the increase in 24-h urinary 5-HIAA, and that the supplementation of the diet of overweight women with 5-hydroxytryptophan increases the feeling of satiety associated with a decrease in BMI.

Satiety and amino-acid profile in overweight women after a new treatment using a natural plant extract sublingual spray formulation.

Rondanelli M, Klersy C, Iadarola P, Monteferrario F, Opizzi A.

Abstract

OBJECTIVE:

To test the effect on satiety of a formulation comprising plant extracts naturally containing 5-hydroxytryptophan, delivered as sublingual spray (5HTP-Nat Exts), administered five times a day for 2 months.
DESIGN:
Two-month, randomized, double-blind, placebo-controlled trial.

SUBJECTS:
A total of 27 healthy, adult overweight women were randomly assigned to the treatment (14) or the placebo group (13).

MEASUREMENTS:
Visual analog scales were used to assess appetite sensations every day. Moreover, the study evaluated the bioavailability of 5-hydroxytryptophan following sublingual delivery over 8 weeks, by comparing 24-h urinary excretion of 5-hydroxy-3-indoleacetic acid (5-HIAA), determined at baseline and after 2 months. Other secondary end points of the study were to compare body composition, depressive symptoms, severity of binge eating and quality of life. Finally, the study tested whether a single administration of 5HTP-Nat Exts in fasting state has an effect on amino-acid profile and on appetite ratings and whether 5HTP-Nat Exts administered before a fixed test meal has any effect on satiety.

RESULTS:
The group using the 5HTP-Nat Exts experienced a significantly greater increase in their sensation of satiety over an 8-week timeframe and in fasting state following administration of 5HTP-Nat Exts than the placebo group did (AUC=305.2 (52.8) vs 236.6 (59.4), mean difference -68.7 (95% confidence interval (CI) -116.2 to -21.2), P=0.007; mean difference in Haber score change 2.5 (95% CI 0.62-3.12, P=0.007)). A difference was observed between the groups for the mean change in 5-HIAA. All the amino acids evaluated after a single administration of 5HTP-Nat Exts were found to be similar. Differences were found for the mean change in body mass index, skinfold thicknesses and hip circumference. The other parameters were found to be similar.

CONCLUSION:
All these findings suggest that 5HTP-Nat Exts may be safely used to treat the problem of appetite control in overweight women during a weight loss program.


Influence of Griffonia simplicifolia on male sexual behavior in rats: behavioral and neurochemical study.
Carnevale G, Di Viesti V, Zavatti M, Benelli A, Zanoli P.

Source
Department of Biomedical Sciences, University of Modena and Reggio Emilia, Via Campi 287, I-41100 Modena, Italy.

Abstract
The seeds of Griffonia simplicifolia Baill. are rich in 5-HTP (5-hydroxytryptophan), a direct precursor of the neurotransmitter serotonin. In the present study we investigated the influence of the plant extract on male sexual behavior. The seed extract was orally administered to Sprague-Dawley male rats at three dose levels (25, 50 and 100 mg/kg) both acutely and subchronically (daily for 9 days). Mating test with receptive female rats was performed 60 min after the acute treatment or the last dose when repetitively administered. Mount, intromission and ejaculation latencies and post-ejaculatory interval were recorded. Food intake and body weight were measured over the 9-day period of treatment. Microdialysis technique was used to detect the extracellular levels of serotonin (5-HT) and its metabolite 5-hydroxyindoleacetic acid (5-HIAA) in rat brain following the acute administration of the extract dosed at 100mg/kg. The acute treatment significantly
increased mount latency (at any dosage), intromission and ejaculation latencies (at 100 mg/kg) and post-ejaculatory interval (at 50 and 100 mg/kg). On the contrary the subchronic treatment failed to exert a significant influence on copulatory behavior. The daily administration of the extract dosed at 50 and 100 mg/kg for 9 days significantly reduced food intake and body weight. Finally in the microdialysis experiments we found a dramatic increase in 5-HT and its metabolite 5-HIAA.


**Anxiolytic-like effect of Griffonia simplicifolia Baill. seed extract in rats.**

Carnevale G, Di Viesti V, Zavatti M, Zanoli P.

**Source**

Department of Biomedical Sciences, University of Modena and Reggio Emilia, Via Campi 287, Modena, Italy. ianluca.carnevale@unimore.it

**Abstract**

The seeds of Griffonia simplicifolia Baill., a tropical shrub native to West Africa, are rich in 5-hydroxy-L-tryptophan (5-HTP), a direct precursor in the synthesis of serotonin (5-HT). In spite of the modern therapeutic application of Griffonia simplicifolia seed extract in mood disorders, no scientific evidence has been provided till now. For this reason the aim of our study was to investigate the effect of Griffonia simplicifolia seed extract on anxiety behavior. Griffonia simplicifolia seed extract, dosed at 1, 5, 10 and 25 mg/kg, was orally administered in rats which were submitted to the dark-light test and open field test, 60 min after the treatment. In the dark-light test, the administration of the extract at the doses of 10 and 25 mg/kg was able to significantly increase the time spent in the light compartment (P<0.05). In the open field test, the extract dosed at 5, 10 and 25 mg/kg induced an anti-tigmotactic effect, as indicated by a significant increase of time spent in the central area of the open field (P<0.01). In conclusion these findings indicate that Griffonia simplicifolia seed extract exerts anxiolytic-like effect in rats and suggest its potential usefulness for the treatment of anxiety in humans.


**An open-label trial of L-5-hydroxytryptophan in subjects with romantic stress.**

Emanuele E, Bertona M, Minoretti P, Geroldi D.

**Source**

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**Abstract**

This open-label trial assessed the clinical efficacy of L-5-hydroxytryptophan (5-HTP), a natural serotonin precursor, in nondepressed young subjects with high levels of romantic stress. Since both neurotrophins and serotonin have been linked to human romantic attachment, we sought to investigate the changes in serum brain-derived neurotrophic factor (BDNF) levels and platelet serotonin content in relation to the changes in romantic stress throughout the study. A total of 15 healthy subjects (11 females and 4 males, mean age: 23.3 ± 2.1 years) who experienced a recent romantic break-up or reported recent romantic problems took part in the study. The participants were treated openly for 6 weeks with L-5-hydroxytryptophan (60 mg Griffonia simplicifolia extract containing 12.8 mg 5-HTP b.i.d., Amorex, Coropharm, Villach, Austria). The subjects were evaluated at baseline, at 3 weeks and at the end of the 6-week trial using an adapted version of the Seiffge-Krenke's Problem Questionnaire. BDNF and platelet serotonin content were determined at baseline, at 3 weeks, and after the completion of the 6-week trial. We observed significant improvements in romantic stress scores from weeks 0 through 3 (p=0.007) but no further significant improvement was evident from weeks 3 through 6 (p=0.19). At 6 weeks, subjects had a significant increase from baseline in both
BDNF and platelet serotonin values. Our data suggest that direct modulation of the serotonergic system may have use for the treatment of psychological suffering associated with unreciprocated romantic love.


**Griffonia simplicifolia negatively affects sexual behavior in female rats.**

**Carnevale G, Di Viesti V, Zavatti M, Benelli A, Zanoli P.**

**Source**

Department of Biomedical Sciences, University of Modena and Reggio Emilia, Via Campi 287, 41100 Modena, Italy.

**Abstract**

At present Griffonia simplicifolia is used in food supplement aimed to treat mood disorders as well as to reduce food intake and body weight. The plant has gained increasing interest for its high content in 5-hydroxy-L-tryptophan (5-HTP) particularly in the seed. The present study was designed to evaluate the influence of a seed extract of the plant, dosed at 25, 50 and 100 mg/kg, on the sexual behavior of ovariectomized hormone-primed rats after acute and subchronic treatment. The single administration of G. simplicifolia significantly reduced lordosis response and increased rejection behavior in female rats treated with the highest dose while it did not influence proceptive behaviors. On the other hand the subchronic administration of the extract significantly reduced proceptivity but not receptivity, and increased rejection behavior. All the tested dosages were able to markedly decrease food intake and body weight after a 9-day treatment. Taken together the present results, possibly ascribed to increased levels of 5-hydroxytryptamine (5-HT) in the brain, suggest a cautious administration of the plant extract owing to its negative influence on female sexual behavior.


**An HPLC method for the direct assay of the serotonin precursor, 5-hydroxytryptophan, in seeds of Griffonia simplicifolia.**

**Lemaire PA, Adosraku RK.**

**Source**

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**Abstract**

5-Hydroxytryptophan (1) is a naturally occurring amino acid found in significant levels in seeds of Griffonia simplicifolia and used in the treatment of the numerous effects of serotonin deficiency syndrome. An HPLC method has been developed for the direct assay of 1 in seeds of G. simplicifolia which overcomes the problems associated with previous techniques. By optimising the solvent extraction procedures and the HPLC conditions, levels of 1 could be estimated following a single-step seed extraction. The chromatographic conditions, solvent system and the extraction technique developed make this method relatively simple, fast and efficient. Using the described methods, the highest ever levels of 1 (namely, 20.83% on a fresh weight basis) have been determined in seeds of G. simplicifolia obtained in Ghana.


**Anxiolytic-like effect of Griffonia simplicifolia Baill. seed extract in rats.**

**Carnevale G, Di Viesti V, Zavatti M, Zanoli P.**
The seeds of Griffonia simplicifolia Baill., a tropical shrub native to West Africa, are rich in 5-hydroxy-L-tryptophan (5-HTP), a direct precursor in the synthesis of serotonin (5-HT). In spite of the modern therapeutic application of Griffonia simplicifolia seed extract in mood disorders, no scientific evidence has been provided till now. For this reason the aim of our study was to investigate the effect of Griffonia simplicifolia seed extract on anxiety behavior. Griffonia simplicifolia seed extract, dosed at 1, 5, 10 and 25 mg/kg, was orally administered in rats which were submitted to the dark-light test and open field test, 60 min after the treatment. In the dark-light test, the administration of the extract at the doses of 10 and 25 mg/kg was able to significantly increase the time spent in the light compartment (P<0.05). In the open field test, the extract dosed at 5, 10 and 25 mg/kg induced an anti-tigmotactic effect, as indicated by a significant increase of time spent in the central area of the open field (P<0.01). In conclusion these findings indicate that Griffonia simplicifolia seed extract exerts anxiolytic-like effect in rats and suggest its potential usefulness for the treatment of anxiety in humans.


Anxiolytic-like effect of Griffonia simplicifolia Baill. seed extract in rats.
Carnevale G, Di Viesti V, Zavatti M, Zanoli P.

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Abstract
The seeds of Griffonia simplicifolia Baill., a tropical shrub native to West Africa, are rich in 5-hydroxy-L-tryptophan (5-HTP), a direct precursor in the synthesis of serotonin (5-HT). In spite of the modern therapeutic application of Griffonia simplicifolia seed extract in mood disorders, no scientific evidence has been provided till now. For this reason the aim of our study was to investigate the effect of Griffonia simplicifolia seed extract on anxiety behavior. Griffonia simplicifolia seed extract, dosed at 1, 5, 10 and 25 mg/kg, was orally administered in rats which were submitted to the dark-light test and open field test, 60 min after the treatment. In the dark-light test, the administration of the extract at the doses of 10 and 25 mg/kg was able to significantly increase the time spent in the light compartment (P<0.05). In the open field test, the extract dosed at 5, 10 and 25 mg/kg induced an anti-tigmotactic effect, as indicated by a significant increase of time spent in the central area of the open field (P<0.01). In conclusion these findings indicate that Griffonia simplicifolia seed extract exerts anxiolytic-like effect in rats and suggest its potential usefulness for the treatment of anxiety in humans.