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A review on Griffonia simplicifollia - an ideal herbal antidepressant

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Abstract

Medicinal plants are the nature's gift to human being to have disease-free healthy life. It plays a vital role to preserve our health. India is one of the most medico-culturally diverse countries in the world where the medicinal plant sector is part of a time-honored tradition that is respected even today. Medicinal plants are believed to be much safer and proved elixir in the treatment of various ailments. In our country, more than 2000 medicinal plants have b een recognized. Griffonia simplicifollia Fabaceae Family) is an important medicinal plant for antidepressant. Its medicinal usage has been reported in the traditional systems of medicine. Griffonia Simplicifollia has been used extensively for treatment of some diseases like as depression, anxiety, insomnia, fibromyalagia, and chronic headache. The present article including the detailed exploration of phyto -pharmacological properties of G. Simplicifollia is an attempt to provide a direction for further research.

Pharmacological Activities

L-5-Hydroxytryptophan (5HTP) is decarboxylated "in vivo" to yield serotonin, a neuro-hormonal transmitter released by neurons in the brain, spinal cord and symphatetic ganglia.. Its seed contains active drug 5-hydroxytryptophan (5-HTP). 5-HTP is an aromatic amino acid naturally produced by the body from the essential amino acid L-tryptophan. Produced commercially by extraction from the seeds of the African plant Griffonia simplicifolia[16] .

Therapeutic Applications

L-5-Hydroxytryptophan is reported to be of greatest benefit in psychiatric and neurological diso rders where there is a deficiency of neurol serotonin. L-5-Hydroxytryptophan is also indicated for its uses in alleviating the symptoms of a number of common syndromes such as anxiety and depression. L-5-Hydroxytryptophan is also cited as a natural relaxant, to help alleviate insomnia by inducing normal sleep, for the treatment of migraine and headaches and to aid in the control of cravings such as in eating disorders. L-5-Hydroxytryptophan is also thought to assist and strengthen the immune system and may help to reduce the risk of artery and heart spasms. L-5-Hydroxytryptophan has also been cited in the management of Parkinson’s disease (PD) and epilepsy

Summary and conclusion

Recent research suggests that Griffonia seed raises serotonin levels in the brain. Serotonin is important in regulating brain chemistry and is especially important in problems such as depression, insomnia, and eating disorders. Theoretically, supplementing with Griffonia seed can raise serotonin levels and provide relief from depre ssion and insomnia. Many Antidepressant drugs are assumed to bring about a mood - elevating effect

by increasing the availability of serotonin in certain brain synapses. Unfortunately, these drugs can produce many unpleasant and dangerous side effects. Since Griffonia simplicifollia (5-HTP naturally) can not be patented as a pharmaceutical substances, drug companies have profit incentive to market this natural substances. 5-HTP appears to have equal efficacy to antidepressant medication, but without the drug risks and side effects. Griffonia seed has also been used in treating fibromyalgia and chronic headaches in order to reduce pain.

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Phytomedicine. 2011 Jul 15;18(10):848-51.
doi: 10.1016/j.phymed.2011.01.016. Epub 2011 Feb 25.

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

G Carnevale[1], V Di Viesti, M Zavatti, P Zanoli

- PMID: 21353511
- DOI: 10.1016/j.phymed.2011.01.016

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.

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Clinical Trial

Neuro Endocrinol Lett. 2010;31(5):663-6.

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

Enzo Emanuele[1], Marco Bertona, Piercarlo Minoretti, Diego Geroldi

- PMID: 21178946

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.

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GINSENG

Panax Ginseng

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Am Fam Physician. 2003 Oct 15;68(8):1539-1542.

The herbal remedies referred to as “ginseng” are derived from the roots of several plants. One of the most commonly used and researched of the ginsengs is Panax ginseng, also called Asian or Korean ginseng. The main active components of Panax ginseng are ginsenosides, which have been shown to have a variety of beneficial effects, including anti-inflammatory, antioxidant, and anticancer effects. Results of clinical research studies demonstrate that Panax ginseng may improve psychologic function, immune function, and conditions associated with diabetes. Overall, Panax ginseng appears to be well tolerated, although caution is advised about concomitant use with some pharmaceuticals, such as warfarin, oral hypoglycemic agents, insulin, and phenelzine. Panax ginseng does not appear to enhance physical performance. Products with a standardized ginsenoside concentration are available.

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Estratto da: Biological Activities of Ginseng and Its Application to Human Health

Jae Joon Wee, Kyeong Mee Park, and An-Sik Chung.

EFFECTS OF GINSENG ON CENTRAL NERVOUS SYSTEM FUNCTIONS

Learning is the acquisition and storage of information as a consequence of experience, and memory is the relatively permanent storage form of the learned information, although it is not a single, unitary phenomenon. Alzheimer's disease is the predominant age-related neurodegenerative disorder, and it is known mainly for its progressive memory loss and consequent dementia in the elderly. Ginsenoside, the active principle in *P. ginseng* root, has been demonstrated to show both neurotrophic effects in memory and learning and neuroprotective actions for the prevention of neuron degeneration.

8.6.1. Learning and Memory

Various memory-impairment models have been used to evaluate the effects of ginseng and its active ingredients on learning and memory. In passive avoidance test, ginsenoside Rg1 improved learning and memory acquisition, consolidation, and retrieval, indicating that Rg1 can improve all stages of memory (Zhang et al. 1990). To study the effect of ginsenoside Rg1 on learning and memory loss induced by β-amyloid, passive avoidance and performance in the Morris water maze were assayed after the final treatment. Ginsenoside Rg1 significantly decreased latency and swimming distance, improved corresponding changes in search strategies in the Morris water maze, and increased step-through latency (Wang and Zhang 2001). In another study, Rg1 significantly improved memory deficits in aged rats, ovariectomized rats, and cerebral ischemia-reperfusion rats (Qiu et al. 1995; Chen, Gong, and Zhang 2001). Results showed that ginseng extract and ginsenosides Rg1 and Rb1 facilitated acquisition and retrieval of memory. Moreover, these ginsenosides also antagonized memory loss and cognitive deficit under various pathological conditions, such as cerebral ischemia and dementia (Qiu et al. 1995).

Among the mechanisms underlying the positive impact on brain aging related to impairment of cognitive function and memory, ginsenosides might potentiate the cholinergic system in CNS. ACH is a very important neurotransmitter in the brain, and its scarcity often leads to learning and memory impairment. Ginsenosides Rg1 and Rb1 were found to enhance the functions of the cholinergic system by increasing the density of central M-cholinergic receptors and increasing the level of ACH in the CNS (Zhang et al. 1988). Glutamate, another neurotransmitter, is also important for learning, memory, and cognitive function. Ginsenosides Rb1 and Rg1 facilitate the release of glutamate evoked by 4-aminopyridine, a potassium channel blocker that depolarizes nerve terminals in vitro (Chang et al. 2008), in a manner corresponding to in vivo depolarization (Tibbs et al. 1989). Ginsenosides Rb1 and Rg1 mediated facilitations of glutamate release are associated with an enhancement of vesicular exocytosis, an increase in Ca^{2+} influx through presynaptic N- and P/Q-type voltage-dependent Ca^{2+} channels and protein kinase A, which subsequently enhances Ca^{2+} entry to cause an increase in evoked glutamate release from rat cortical synaptosomes (Chang et al. 2008). Further study of this group showed that ginsenosides Rb1 and Rg1 enhanced glutamate exocytosis from rat cortical nerve terminals by affecting vesicle mobilization through the activation of protein kinase C (Chang and Wang 2008).

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Review

J Altern Complement Med. 2018 Jul;24(7):624-633.

doi: 10.1089/acm.2017.0361. Epub 2018 Apr 6.

Ginseng as a Treatment for Fatigue: A Systematic Review

Noël M Arring[1], Denise Millstine[2][3], Lisa A Marks[4], Lillian M Nail[5]

- PMID: 29624410
- DOI: 10.1089/acm.2017.0361

Abstract

Background: Millions of people with chronic illness suffer from fatigue. Fatigue is a complex, multidimensional symptom with poorly understood causes, wide variations in severity among individuals, and negative effects on multiple domains of daily life. Many patients with fatigue report the use of herbal remedies. Ginseng is one of the most widely used because it is believed to improve energy, physical and emotional health, and well-being.

Objective: To systematically review the published evidence to evaluate the safety and effectiveness of the two types of Panax ginseng (Asian [Panax ginseng] and American [Panax quinquefolius]) as treatments for fatigue.

Design: PubMed, CINAHL (Cumulative Index to Nursing and Allied Health), Ovid MEDLINE, and EMBASE databases were searched using Medical Subject Heading and keyword terms, including ginseng, Panax, ginsenosides, ginsenoside* (wild card), fatigue, fatigue syndrome, cancer-related fatigue, and chronic fatigue. Studies were included if participants had fatigue, had used one of the two Panax ginsengs as an intervention, and had scores from a self-report fatigue measure. Two reviewers independently assessed each article at each review phase and met to develop consensus on included studies. Risk of bias was assessed using version 5.3 of the Cochrane Collaboration Review Manager (RevMan), and results were synthesized in a narrative summary.

Results: The search strategy resulted in 149 articles, with 1 additional article located through review of references. After titles, abstracts, and full text were reviewed, 139 articles did not meet inclusion criteria. For the 10 studies reviewed, there was a low risk of adverse events associated with the use of ginseng and modest evidence for its efficacy.

Conclusions: Ginseng is a promising treatment for fatigue. Both American and Asian ginseng may be viable treatments for fatigue in people with chronic illness. Because of ginseng's widespread use, a critical need exists for continued research that is methodologically stronger and that includes more diverse samples before ginseng is adopted as a standard treatment option for fatigue.

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Clinical Trial

Int J Clin Pharmacol Res. 1999;19(3):89-99.

Effects of a standardized ginseng extract on quality of life and physiological parameters in symptomatic postmenopausal women: a double-blind, placebo-controlled trial. Swedish Alternative Medicine Group

I K Wiklund[1], L A Mattsson, R Lindgren, C Limoni

- PMID: 10761538

Abstract

A randomized, multicenter, double-blind, parallel group study was performed to assess the effects of a standardized ginseng extract compared with those of a placebo on quality of life (QoL) and on physiological parameters in symptomatic postmenopausal women. Validated questionnaires [Psychological General Well-Being (PGWB) index, Women's Health Questionnaire (WHQ)] and Visual Analogue (VA) scales were used to assess the effects of the extract on QoL at baseline and after 16 weeks' treatment with either the ginseng extract or placebo. To assess the efficacy of ginseng on postmenopausal symptoms, physiological parameters [follicle-stimulating hormone (FSH) and estradiol levels, endometrial thickness, maturity index and vaginal pH] were recorded at the same time points. Of the 384 randomized patients (mean age 53.5 +/- 4.0 years), the questionnaires were completed by 193 women treated with ginseng and 191 treated with placebo. With regard to the primary endpoint (total score of the PGWB index) the extract showed only a tendency for a slightly better overall symptomatic relief ($p < 0.1$). Exploratory analysis of PGWB subsets, however, reported p-values < 0.05 for depression, well-being and health subscales in favor of ginseng compared with placebo. No statistically significant effects were seen for the WHQ and the VA scales or the physiological parameters, including vasomotor symptoms (hot flushes). The positive effects of ginseng on health-related QoL in menopausal women should be further investigated. This study shows, however, that the beneficial effects of ginseng are most likely not mediated by hormone replacement-like effects, as physiological parameters such as FSH and estradiol levels, endometrial thickness, maturity index and vaginal pH were not affected by the treatment.

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Clinical Trial

J Ethnopharmacol. Apr-May 1986;16(1):15-22.
doi: 10.1016/0378-8741(86)90063-2.

A double-blind, placebo-controlled clinical study on the effect of a standardized ginseng extract on psychomotor performance in healthy volunteers

L D'Angelo, R Grimaldi, M Caravaggi, M Marcoli, E Perucca, S Lecchini, G M Frigo, A Crema

- PMID: 3528672
- DOI: 10.1016/0378-8741(86)90063-2

Abstract

Various tests of psychomotor performance were carried out in a group of 16 healthy male volunteers given a standardized preparation of Korean ginseng (G 115; 100 mg twice a day for 12 weeks) and in a similar group given identical placebo capsules under double-blind conditions. A favourable effect of G 115 relative to baseline performance was observed in attention (cancellation test), processing (mental arithmetic, logical deduction), integrated sensory-motor function (choice reaction time) and auditory reaction time. However, end performance of the G 115 group was superior statistically to the placebo group only in mental arithmetic. No difference between G 115 and placebo was found in tests of pure motor function (tapping test), recognition (digit symbol substitution) and visual reaction time. No adverse effects were reported. It is concluded that G 115 may be superior to placebo in improving certain psychomotor functions in healthy subjects.

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MACA ANDINA

Review

Rev Peru Med Exp Salud Publica. 2014;31(1):100-10.

Maca (Lepidium meyenii Walp), a review of its biological properties

Gustavo F Gonzales[1], Leonidas Villaorduña[2], Manuel Gasco[1], Julio Rubio[1], Carla Gonzales[1]

Abstract

Maca (Lepidium meyenii) is a plant that grows above 4000 altitude meters in Peru's Central Andes; it has different varieties according to the color of the hypocotyl. This review summarizes the results of studies about the effects of maca on sexual function, spermatogenesis, female reproductive function, memory, depression and anxiety, and energy as well as effects on benign prostatic hyperplasia, osteoporosis and metabolic syndrome. Its anti-aging effect is also discussed as well as safety in consumption. Differences have been shown between the effects of the black, yellow and red maca varieties. Black maca shows the best results on spermatogenesis, memory and fatigue, while red maca is the variety that reverses the benign prostatic hyperplasia and experimentally induced osteoporosis. In addition, maca reduces the glucose levels, and its consumption is related to

the lowering of blood pressure and an improved health score. Experimental studies have proven that short and long term consumption don't show in vivo and in vitro toxicity. Although experimental studies have shown that maca has diverse beneficial effects, more clinical studies are needed to confirm these results.

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Review

Food Funct. 2020 Jan 29;11(1):83-92.
doi: 10.1039/c9fo02732g.

Medicinal effects of Peruvian maca (Lepidium meyenii): a review

Natália da Silva Leitão Peres[1], Letícia Cabrera Parra Bortoluzzi, Leila Larisa Medeiros Marques, Maysa Formigoni, Renata Hernandez Barros Fuchs, Adriana Aparecida Droval, Flávia Aparecida Reitz Cardoso
Affiliations expand

- PMID: 31951246
- DOI: 10.1039/c9fo02732g

Abstract

Peruvian maca (Lepidium meyenii) is a root native to the Andean region, cultivated for at least 2000 years. Maca is rich in fiber, a large number of essential amino acids, fatty acids, and other nutrients, including vitamin C, copper, iron, and calcium. Besides these essential nutrients, this root contains bioactive compounds responsible for benefits to the human body, which has caused a considerable increase in its consumption in the last 20 years worldwide. This review documents the Peruvian maca composition and the recent findings regarding the medicinal effects of this root in sexual dysfunction regulation, neuroprotective effects, action in memory enhancement, antidepressant, antioxidant, anti-cancer, and anti-inflammatory activities, and skin protection.

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Evid Based Complement Alternat Med. 2012; 2012: 193496.

Published online 2011 Oct 2. doi: 10.1155/2012/193496

PMCID: PMC3184420

PMID: 21977053

Ethnobiology and Ethnopharmacology of *Lepidium meyenii* (Maca), a Plant from the Peruvian Highlands

Gustavo F. Gonzales*

Abstract

Lepidium meyenii (maca) is a Peruvian plant of the Brassicaceae family cultivated for more than 2000 years, which grows exclusively in the central Andes between 4000 and 4500 m altitude. Maca is used as a food supplement and also for its medicinal properties described traditionally. Since the 90s of the XX century, an increasing interest in products from maca has been observed in many parts of the world. In the last decade, exportation of maca from Peru has increased from 1,415,000 USD in 2001 to USD 6,170,000 USD in 2010. Experimental scientific evidence showed that maca has nutritional, energizer, and fertility-enhancer properties, and it acts on sexual dysfunctions, osteoporosis, benign prostatic hyperplasia, memory and learning, and protects skin against ultraviolet radiation. Clinical trials showed efficacy of maca on sexual dysfunctions as well as increasing sperm count and motility. Maca is a plant with great potential as an adaptogen and appears to be promising as a nutraceutical in the prevention of several diseases.

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Int J Biol Macromol. 2017 Feb;95:1305-1311.
doi: 10.1016/j.ijbiomac.2016.11.031. Epub 2016 Nov 10.

Anti-fatigue activity of polysaccharide fractions from Lepidium meyenii Walp. (maca)

Jing Li[1], Qingrui Sun[2], Qingran Meng[2], Lei Wang[2], Wentao Xiong[3], Lianfu Zhang[4]

Abstract

The two fractions of polysaccharide MPS-1 and MPS-2 were extracted from Lepidium meyenii Walp. (maca) by water, and purified using a DEAE-52 and a Sephadex G-100 column. The molecular weight (M_w) of MPS-1 was 7.6kDa, and the M_w of MPS-2 was 6.7kDa. The MPS-1 was composed of xylose, arabinose, galactose and glucose, with the mole ratio 1:1.7:3.3:30.5; the MPS-2 was composed of arabinose, galactose and glucose, with the mole ratio 1:1.3:36.8. The IR spectrum implied that only α-pyranose existed in MPS-1, and both α-pyranose and β-pyranose existed in MPS-2. The anti-fatigue activities of MPS-1 and MPS-2 were measured by the forced swimming test, along with the determination of blood lactate (BLA), urea nitrogen (BUN), lactic dehydrogenase (LDH) activity and liver glycogen (LG). The results indicated that both MPS-1 and MPS-2 presented dose-dependently positive effects on the fatigue related parameters. Additionally, MPS-2 has a better anti-fatigue effect than MPS-1.

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Muira puama *(or* ***Ptychopetalum***, ***Marapuama***, ***Potency Wood****) is used by amazonian people as a "nerve tonic" and to treat various age-related conditions [1]. This shrub is native to Brazil and has long been used as a powerful aphrodisiac and nerve stimulant in South American folk medicine. This herb is currently included in many dietary supplements available all around the world that are claimed to enhance sexual, physical and cognitive performance.*

Aphrodisiac Effects of **Muira puama**

One study conducted in 202 healthy women complaining about low sex drive assessed the efficacy of herbal mixture of 175 mg Muira puama extract and 16 mg *Ginkgo biloba* [2]. After 1 month of treatment significantly **improved scores on a self-assessment of their sex drive and other aspects of sexual function and behavior** were noted in two-thirds of participants.

A clinical study conducted at the Institute of Sexology in Paris, France under the supervision of Dr. Jacques Waynberg (not accessible online) [2,3], in 262 men with erectile dysfunction problems and complaining of lack of sexual desire, demonstrated **Muira puama extract (Ptychopetalum olacoides) to reverse low libido and/or erectile dysfunction problems** in men within a two-week period.

Nootropic Effects

A study in animals suggests that a single administration (by intraperitoneal injection) of Muira puama (*Ptychopetalum olacoides*) ethanol extract facilitates memory retrieval [4].

It has been noted by Adriana L. da Silva and associates [5] that Muira puama (*Ptychopetalum olacoides*) ethanol extract **significantly improved step-down inhibitory avoidance long-term and short-term memory** in adult and reversed memory deficits in aging mice. Improved memory processes may be attributed to **acetylcholinesterase inhibitory properties of Muira puama** [4,5].

Inhibition of acetylcholinesterase is considered as a promising strategy for the treatment of neurological disorders such as Alzheimer's disease, senile dementia, ataxia and myasthenia gravis [7]. The goal of acetylcholinesterase inhibitors is improved cholinergic transmission (enhancing cholinergic function by stimulation of cholinergic receptors) [8,9]. Muira puama has also **significantly inhibited acetylcholinesterase activity *in vitro*** in a dose- and time-dependent manner in rat frontal cortex, hippocampus and striatum [10].

Interactions with various neurotransmitters (including noradrenaline, serotonin and dopamine) have also been suggested [6,14].

Effects on Stress and Anxiety

Muira puama extracts are consumed in the Amazon for the treatment of central nervous system related conditions or during highly stressful periods. Siqueira et al. [6]. reported that Muira puama roots **possess various central nervous system activities including mild anxiogenic effect**. Anxiogenic effects were also reported by da Silva and colleagues [11].

Ptychopetalum olacoides (Marapuama) **might also possess adaptogen-like properties** as researchers from Brazil reported its counteraction with some of the effects of chronic stress [12].

Antioxidant properties of Muira puama could be (at least to some degree) related to some of the therapeutic properties claimed to be associated with its use [12,13]. It is not completely known which active compound or by which mechanism Muira puama exerts its antioxidant activities. However, **beta-sistosterol** and lupeol, both present in Muira puama (*Ptychopetalum olacoides*), have been shown to possess antioxidant properties [12].

Possible Antidepressant

Results of animal study by Piato et al. [14] indicated that Muira puama (*Ptychopetalum olacoides*) **possesses antidepressant-like effects**. In these antidepressant-like effects involvement of dopamine, noradrenaline and serotonin was examined. Researchers suggested that this effects is **mediated by beta-adrenergic and D_1 dopamine receptors**.

Muira puama Side Effects and Safety

Clinical toxicology study in healthy volunteers reported no severe adverse reactions or hematological and biochemical changes also there were not adverse actions on the subjects [15].

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Phytomedicine. 2010 Mar;17(3-4):248-53.
doi: 10.1016/j.phymed.2009.07.001. Epub 2009 Aug 13.

Anti-stress effects of the "tonic"Ptychopetalum olacoides (Marapuama) in mice

A L Piato[1], B C Detanico, V M Linck, A P Herrmann, D S Nunes, E Elisabetsky

- PMID: 19682881
- DOI: 10.1016/j.phymed.2009.07.001

Abstract

With the recognition that high levels of sustained stress are associated with the natural course of countless illnesses, effective anti-stress agents have gained importance. Improved endurance to particularly stressful periods is one of the medicinal claims for Marapuama (Ptychopetalum olacoides Bentham, PO), a popular Amazonian herbal. The purpose of this study was to evaluate if PO possesses anti-stress properties. To this end, an extract from PO (POEE) was evaluated on anxiety and glucose levels in mice submitted to the unpredictable chronic mild stress (UCMS) paradigm. POEE did not present anxiolytic effects, but was able to prevent ($p<0.01$) the UCMS-induced anxiety as assessed by the light/dark test (time spent in the lit area, POEE 100 and 300mg/kg 235.9+/-20.6s and 250.4+/-17.4s, respectively, compared to DMSO 104.7+/-24.4s). Likewise, although POEE did not induce noticeable effects on glycemia, it effectively ($p<0.01$) prevented the UCMS-induced hyperglycemia (POEE 100 and 300mg/kg 106.4+/-6.7mg/dl and 107.3+/-3.3mg/dl, respectively, compared to DMSO 134.6+/-5.9mg/dl). Additionally, POEE (50-200mg/kg i.p. and 800mg/kg p.o.) significantly ($p<0.01$ and $p<0.05$, respectively) increased the time to hypoxia-induced convulsion (by 38%, 51%, 59% and 27%, respectively for i.p. and p.o. treatments). The data indicate that POEE counteracts some of the effects brought about by chronic stress. This study combined with the identified antioxidant and neuroprotective properties, as well as the claimed benefits associated with stressful periods suggest that Ptychopetalum olacoides (Marapuama) might possess adaptogen-like properties.

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Comparative Study

Pharmacol Biochem Behav. 2003 Jun;75(3):645-50.
doi: 10.1016/s0091-3057(03)00113-8.

Ptychopetalum olacoides, a traditional Amazonian "nerve tonic", possesses anticholinesterase activity

Ionara Rodrigues Siqueira[1], Cíntia Fochesatto, Adriana Lourenço da Silva, Domingos Sávio Nunes, Ana Maria Battastini, Carlos Alexandre Netto, Elaine Elisabetsky

- PMID: 12895682
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Abstract

The cholinergic hypothesis of Alzheimer disease (AD) has provided the rationale for the current pharmacotherapy of this disease, in an attempt to downgrade the cognitive decline caused by cholinergic deficits. Nevertheless, the search for potent and long-acting acetylcholinesterase (AChE) inhibitors that exert minimal side effects to AD patients is still an ongoing effort. Amazonian communities use traditional remedies prepared with Ptychopetalum olacoides (PO, Olacaceae) roots for treating various central nervous system conditions, including those associated with aging. The fact that PO ethanol extract (POEE) has been found to facilitate memory retrieval in the step down procedure in young and aged mice prompt us to evaluate its effects on AChE activity in memory relevant brain areas. POEE significantly inhibited AChE activity in vitro in a dose- and time-dependent manner in rat frontal cortex, hippocampus and striatum; a significant inhibition was also found in these same brain areas of aged (14 months) mice after acute administration of POEE (100 mg/kg ip). We propose that such AChE inhibitory activity is a neurochemical correlate of a number of therapeutic properties traditionally claimed for P. olacoides, particularly those associated with cognition.

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