



THERAPEUTIC POTENTIAL HEALTH BENEFITS OF ASHWAGANDHA(WITHANIA SOMNIFERA)

Unani Medicine

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ABSTRACT

Withania somnifera Ashwagandha(Asgandh) is a well-known Indian medicinal plant widely used in the treatment of many clinical conditions in India. It is an important drug commonly known as Asgand which has been used either single or in combination with other drugs in Unani system of medicine for centuries. W. somnifera was found to be especially active against many neurological and psychological conditions like Parkinson's disease, Alzheimer's disease, Huntington's disease, ischemic stroke, sleep deprivation, amyotrophic lateral sclerosis, attention deficit hyperactivity disorder, bipolar disorder, anxiety, depression, schizophrenia and obsessive-compulsive disorder The drug is reported with anti-inflammatory, anti-arthritic, caridoprotective, anti-stress, trainquillizers type sedative activity, hypoglycemic, thyroprotective activity and proved to be an effective remedy in cancer cells and the malignant growth of different organs Unani medicine revealed that the drug having numerous therapeutic action such as Muhallile warm (anti-inflammatory), Moallide mani (semen producer), Musakkin (sedative), Muqawwie aam (General tonic) and Muqawwie Bah (aphrodisiac). Keeping in view the medicinal properties of Withania somnifera Dunal (Asgand), an attempt has been made in this review paper to explore various dimensions of the drug including botanical, chemical and pharmacological studies of plant besides its traditional uses in Unani Medicine.

KEYWORDS

Ashwagandha, Withania somnifera, caridoprotective, aphrodisiac, trainquillizers, Asgandh

Ashwagandha

Botanical name : (Withania somnifera)

Vernaculars:

Sanskrit : Ashwagandha unani : Asgandh
Tamil : Ammukira Kannada : Amangura
English : winter cherry Bengali : Asvagandha
Gujrati : Asundha

Botanical Description:

W. somnifera is an erect, greyish, slightly hairy evergreen shrub with fairly long tuberous roots. It is widely cultivated in India and throughout the Middle East, and is found in eastern Africa. The flowers are small and greenish, single or in small clusters in the leaf axils. The fruit is smooth, round, fleshy, and has many seeds, orange-red when ripe, enclosed in a membranous covering.

Withania somnifera Dunal commonly known as Asgandh or Ashvaganadha is one of the most potent aphrodisiacs used in traditional systems of medicine. It is common herb found throughout the dried and subtropical parts of India. The root and leaves of plants are used for medicinal purposes. In traditional systems of medicine particularly Ayurveda and Unani the plant is thought to possess anti-inflammatory, stomachic, semenogogue, nerve tonic, sedative, aphrodisiac, lithotriptic, galactagogue and many other important medicinal properties. The plant is also used in preparations of many compound Unani formulations.(1-6) The review reveals that many phytochemically active constituents have been separated from the plant which act as sedative, hypnotic, GABA mimetic, hypertensive, bradycardiac, anti-stress, antitumor, antiarthritic and antibacterial agents. The separation of chemical constituents from plants and modern scientific studies revalidate Unani and Ayurvedic medicines. This review encompasses the available literature on Withania somnifera Dunal, which might be supportive for researchers and scientists to uncover new chemical entities responsible for its claimed traditional uses.



Ashwagandha root, flower and leaf

Part Used: Root

Chemistry:

Major Active constituents: Withanoloids

The principal bioactive compounds of W. somnifera are withanolides, highly oxygenated C-28 steroid derivatives. More than 40 withanolides have been isolated and identified from W. somnifera. Three chemotypes of the plant have been defined: Indian (I), which contains withanone and withaferin A as major constituents; Israeli (II), whose major withanolides are withanolide D and 27 hydro xywithanolide D; and Israeli (III), containing principally withanolide E. The biosynthesis of withanolides from the cholesterol pathway has been studied, and the C-13 NMR spectra of withanolides have been assigned. W. somnifera roots also contain nicotine and assorted piperidine and pyrrolidine alkaloids. The leaves have been found to contain flavonol glycosides and phenolic acids.

Medicinal uses:

Used as a tonic herb for promoting longevity and treating emaciation in people, including babies, and for improving reproductive functions of both men and women. It was also used historically for treating inflammation, swollen glands, arthritis, rheumatism, anxiety, stress, constipation, low energy, as a liver tonic, astringent, and more recently to treat bronchitis, asthma, ulcers, insomnia, and senile dementia. This herb was also known as a potent aphrodisiac. Clinical trials and animal research support the use of ashwagandha for treating anxiety, cognitive and neurological disorders, inflammation, Parkinson's disease, and as a potentially useful adjunct for patients undergoing radiation and chemotherapy. Numerous studies on both animals and humans have attested to the anti-arthritis and mind calming properties of ashwagandha. Specific alkaloids found in ashwagandha root have noted calming, anticonvulsant and antispasmodic properties. Other constituents, namely the sitoindosides, improve immune system and white blood cell responses to pathogens by increasing phagocytosis. It is recommended that men suffering from impotence and poor libido take ashwagandha root occasionally as a tonic. Unani physicians recommend ashwagandha for increasing milk secretion, male libido and improving sexual function and alleviating erectile dysfunction. (1,6)

Withania somnifera, best known as ashwagandha has been used for centuries for the treatment of vivid health disorders. Multiple health benefits featured in this herbal supplement makes it as a perfect rejuvenator of physical and psychological health. As per research, this medicinal herb is mainly found in the regions of North America and India. Powerful antioxidant compounds enriched in this herb scavenges free radicals and reduces aging impact on person. Apart

from consuming this extract, diet taken by person plays an important role in increasing the level of antioxidants in body. In order to obtain good level of antioxidants, it is advised to include surplus amount of fruits and vegetables in diet.

Action mentioned in Unani medicine

Mohallile Warm (Anti-inflammatory), (2,3,4) Muqawwie Aam (General tonic), (2,4) Muqawwie Meda (Stomachic), (4) Muwallide Mani (Semenagogue), (3,4) Musammine Badan, (4) Musakkine Asab (Nervine tonic), (4) Munawwim (Sedative), (4) Muqawwie Bah (Aphrodisiac), (3,5) Muqawwie Rahm, (3,5) Mufattite hisat (Lithotriptic) (5) Mudammile quruh (Ulcer healing), (5) Muqawwie hafza (5) Musaffie dam (Blood purifier), (5) Mughallize mani, (3) Muwallide Sheer (Galactagogue). (3)

Uses mentioned in Unani medicine

Sailanur Rahem (Leucorrhoea), (4) Jiryana (Spermatorrhoea), (3,4,5) Riqqate Mani, (4) Wajul Qutn (Lumabago), (4) Wajul Mafasil (Arthritis), (2,3,4) Zofe Bah (Sexual weakness), (3,4) Ghatiya (Rheumatism) (5) Bars (Vitiligo) (5) Taoun (Plague), (5) Bawaseere damwi (Bleeding piles), (5) Waram Khussiya (Orchitis), (5) Hisate gurda wa masana (Kidney and bladder calculi), (5) Nisyan (Amnesia), (5) Qillate mani (oligospermia). (2)

IMPORTANT FORMULATIONS

Habbe asgandh, Majoone Sohag, Majoone Salab, Zimade Mohallil, Kushtae Gaodanti. (4)

SCIENTIFIC REPORTS

Anti-stress activity:

A study was performed to understand the role of stress in male infertility, and to test the ability of *W. somnifera* to combat stress and treat male infertility. Researchers had selected normozoospermic but infertile individuals (n = 60). Normozoospermic fertile men (n = 60) were recruited as controls. The subjects were given root powder of *W. somnifera* 5 g/day for 3 months. They measured various biochemical and stress parameters before and after treatment, suggested a definite role of stress in male infertility and the ability of *W. Somnifera* to treat stress-related infertility. Treatment resulted in a decrease in stress, improved the level of anti-oxidants and improved overall semen quality in a significant number of individuals. The treatment resulted in pregnancy in the partners of 14% of the patients. (7)

Testicular development:

Abdel Magied EM et al in a study at evaluated the effect of lyophilized aqueous extract of *Cynomorium coccineum* and *Withania somnifera* on testicular development and on serum levels of testosterone, ICSH and FSH in immature male Wistar rats. There was a notable increase in testicular weight of animals treated with both extracts. Histological examination revealed an apparent increase in the diameter of seminiferous tubules and the number of seminiferous tubular cell layers in the testes of treated rats as compared with control ones. (8)

Thyroid dysfunction:

The effects of daily administration of *Withania somnifera* root extract (1.4 g/kg body wt.) and *Bauhinia purpurea* bark extracts (2.5 mg/kg body wt.) for 20 days on thyroid function in female mice were investigated. It was reported that serum tri-iodothyronine (T3) and thyroxine (T4) concentrations were increased significantly by *bauhinia*, *withania* could enhance only serum T4 concentration. (9)

Appetizer activity:

In a study alcoholic extracts of *Withania somnifera* was administered for 21 days in stress induced anorexic rats and LPS-induced anorexic rats. The results of study showed that alcoholic root extract of *Withania somnifera* (100 and 300 mg/kg) dose dependently increases food consumption, number of attempts for food consumption and body weight in stress induced anorexic rats and LPS induced anorexic rats. (10)

Anthelmintic activity:

Shukla Kirtiman et al was tested the hydroalcoholic extracts of *Withania somnifera* against adult *Pheretima posthuma* worms for the evaluation of anthelmintic activity at various concentrations. The results were expressed in terms of time for paralysis and time for death of worms. They showed that the extract exhibited significant wormicidal activity at dose of 40 mg/ml. (11)

Antidepressant activity:

Jayanthi MK et al carried out an experimental study using 3 models, behavioural despair tests, forced swim test (FST), tail suspension test (TST) and anti-reserpine test. Effect of different doses of *Asgandh* was studied on behavioural despair tests induced immobility time and reserpine antagonism. It produced dose dependent decrease in immobility time in chronic studies in FST and TST model, maximum effect being observed with the dose 40 mg/kg. (12)

Anti microbial activity:

The study conducted by Premlata Singariya et al at shows antimicrobial property of *Withania somnifera*, in this study the crude extracts of *Withania somnifera* were successively extracted with polar to non polar solvents using Soxhlet assembly. The extracts were then screened for their antimicrobial activity in-vitro against one gram positive bacteria (*Bacillus subtilis*), two gram negative bacteria (*Pseudomonas aeruginosa* and *Enterobacter aerogens*) and one fungus (*Aspergillus flavus*) by disc diffusion assay. Serial dilution method was used to determine minimum inhibitory concentration (MIC) and minimum bactericidal/fungicidal concentration. The chloroform extract of calyx of *Withania somnifera* showed highest activity against *B. Subtilis*. (13)

Chondroprotective activity

Venil N et al in a study on explant model of human osteoarthritis cartilage found that *W. Somnifera* root powders showed reproducible, statistically significant, short-term chondroprotective activity in 50% of osteoarthritis cases tested in an explant model of human osteoarthritis cartilage damage. (14)

Cardioprotective:

A study conducted by Das PK et al suggests that the constituents of *Withania somnifera* are structurally similar to digoxin and demonstrated exhibit cardioprotective activity and provide a salutary effect in CHF. (15)

Positive inotropic activity:

In a study conducted *Withania somnifera* has been reported to have autonomic ganglion blocking action and myocardial depressant effects and reduce blood pressure due to its positive inotropic and chronotropic properties. (16)

Inflammatory bowel disease (IBD):

A study based on concentration dependant antioxidant activity of the extracts of *Withania somnifera* was carried out and results were evaluated using biochemical assays like, inhibition of lipid peroxidation, no scavenging, H₂O₂ scavenging, and ferric reducing power assay. This study supported antioxidant potential of aqueous extract of roots of *Withania somnifera* and its utility to ameliorate inflammation, which is the key pathology in inflammatory bowel disease (IBD). The topical application in the form of rectal gel formulation proved to be as effective as the mesalamine treatment. (17)

Osteoarthritis:

Kulkarni RR et al in a double blind study revealed the clinical efficacy of a herbomineral formulation containing roots of *Withania somnifera*. The results showed that treatment with the herbomineral formulation produced a significant drop in severity of pain and disability score. Radiological assessment, however, did not show any significant changes in both the groups. (18)

Analgesic activity:

Twajj et al in a study stated the analgesic effects of *Asgandh* that soothes nervous system from pain response and hence used as potent analgesic in traditional system of medicine. (19)

Hypothyroidism and galactagogue:

Studies on animal models revealed *Asgandh* has a thyrotropic effect and milk secretion increasing properties. An aqueous extract of dried *withania* root was given to mice via gastric intubation at a dose of 1.4 g/kg body weight daily for 20 days. Serum was collected at the end of the 20 day period and analyzed for T3 and T4 concentrations and lipid peroxidation was measured in liver homogenate via antioxidant enzyme activity. Significant increases in serum T4 were observed, indicating the plant has a stimulatory effect at the glandular level. (20)

MIZAJ: hot and dry in second degree

Substitute: behman safaid

Dose: 3-5 masha

REFERENCES:

- Christina AJ, Joseph DG, Packialakshmi M, Kothai R, Robert SJ, Chidambaranathan N, Ramasamy M. Anticarcinogenic activity of *Withania somnifera* Dunal against Dalton's ascitic lymphoma. *J Ethnopharmacol*. 2004 Aug;93(2-3):359-61.
- Kabeeruddin M. *Makhzanul mufradat*, 2nd ed, Idara kitabul shifa, New Delhi, 2010; 75-6.
- Kabeeruddin M. *Ilmul Advia Nafisi*, Ejaz publishing House, New Delhi, 2007; 238-9.
- Anonymous. *The Unani pharmacopoeia of India*, Vol 3 Part 1, Government of India. Ministry of Health and Family welfare. Dept. of AYUSH, New Delhi, 2007; 107-108.
- Najmul Ghani. *Khazaimul advia*, Idara kitabul shifa, New Delhi, YNM; 30-1
- Farah A, Qudsia N, Aslam M. *Classification of Unani drugs*, Fine Offset works, New Delhi, 2005;37, 51.
- Abbas Ali Mahdi, Kamla Kant Shukla, Mohammad Kaleem Ahmad, Singh Rajender, Satya Narain Shankwar, Vishwajeet Singh, and Deepansh Dalela. *Withania somnifera* improves semen quality in stress-related male fertility, *EvidenceBased Complementary and Alternative Medicine*; 2011; 1-9.
- Abdel Magied EM, Abdel-Rahman HA, Harraz FM. The effect of aqueous extracts of *Cynomorium coccineum* and *Withania somnifera* on testicular development in immature Wistar rats, *J Ethnopharmacol*, 2001; 75(1):1-4.
- Panda S, Kar A. *Withania somnifera* and *Bauhinia purpurea* in the regulation of circulating thyroid hormone concentrations in female mice, *J Ethnopharmacol*, 1999 ;67(2):233-9.
- Anup Patil, Vijay Raje, Nilesh Darekar, Sunil Karale. Effect of alcoholic root extract of *Withania somnifera* on experimentally induced anorexia in rats, *International journal of phytotherapy research*, 2012; 2(3): 1-15.
- Shukla Kirtiman. Comparative study of *Withania somnifera* and *Ocimum sanctum* for Anthelmintic Activity, *ISCA Journal of Biological Sciences*, 2012; 1(1): 74-76.
- Jayanthi MK, Prathima c, Huralikuppi JC, Suresha RN, Murali Dhar. Anti-depressant effects of *Withania somnifera* fat (ashwagandha ghrutha) extract in experimental mice, *International Journal of Pharma and Bio Sciences*, 2012; 3 (1): 33-42.
- Dr. Premlata Singariya, Dr. Krishan Kumar Mourya, and Dr. Padma Kumar. Antimicrobial Activity of the Crude Extracts of *Withania somnifera* and *Cenchrus setigerus* In-vitro, *Pharmacognosy Journal*, 2012; 4 (27): 60-65. *Int. Res J Pharm. App Sci.*, 2013; 3(4):59-63 ISSN: 2277-4149 Shaikh Imtiyaz et al., 2013 63
- Venil N Sumantran, Asavari Kulkarni, Sanjay Boddul, Trushna Chinchwade, Soumya J Koppikar, Abhay Harsulkar et al. Chondroprotective potential of root extracts of *Withania somnifera* in osteoarthritis, *J. Biosci*, 2007; 32(2):299–307.
- Das PK, Malhotra CL, Prasad K. Cardiotoxic activity of ashwagandhinine and Ashwagandhinine, two alkaloids from *withania*, *Arch int pharmacodyn ther*, 1964; 21: 356 -62. 20. Budhiraja, RD, Sudhir S, Garg KN. Cardiovascular effects of a withanolide from *Withania coagulans* dunal fruits. *Indian j. Physiol. pharmacol.*, 1983; 27: 129-34.
- Pankaj Pawar, Suhit Gilda, Siddhesh Sharma, Suresh Jagtap, Anant Paradkar, Kakasaheb Mahadik, Prabhakar Ranjekar and Abhay Harsulkar. Rectal gel application of *Withania somnifera* root extract expounds anti-inflammatory and mucorestorative activity in TNBS-induced Inflammatory Bowel Disease, *BMC Complementary and Alternative Medicine*, 2011; 11(34):1-9.
- Sachdeva H, Sehgal R, Kaur S. Studies on the protective and immunomodulatory efficacy of *Withania somnifera* along with cisplatin against experimental visceral leishmaniasis, *Parasitol Res*. 2013 .
- Kulkarni RR, Patki PS, Jog VP, Gandage SG, Patwardhan B. Treatment of osteoarthritis with a herbomineral formulation: a double-blind, placebo-controlled, cross-over study, *J Ethnopharmacol*, 1991; 33(1-2):91-5.
- Twajj Haa, Elisha EE, Khalid RM. Analgesic studies on some Iraqi medicinal plants, *International journal of crude research*. 1989; 27:109–112
- Andallu B, radhika B. Hypoglycemic, diuretic and hypocholesterolemic effect of winter cherry (*Withania somnifera*) root, *Indian j exp boil*, 2000; 38: 607-609.