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ASHWAGANDHA WITHANIA SOMNIFERA (L) DUNAL A GIFTED NUTRITION BOOSTER

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ABSTRACT

Ashwagandha (Withania somnifera) is a well known herb possessing several health benefits and a commonly used Ayurvedic medicine. Although the review article on this plant is already published, but this review article is presented to compile all the updated and interrelated information related to their nutritional values as antioxidant and memory enhancing property. The steroidal lactones (withanolides) obtained from its roots have been implicated in a wide range of therapeutic activities and maintaining general health. Immunomodulation, combating infectious agents, anti-cancer and anti-epileptic, memory enhancer, to promote good physical and mental health, mood elevator, diuretic, general tonic and rejuvenator, stress reliever, cardiorespiratory endurance enhancer, anti-ageing, anti-oxidant, hypoglycemic, hypocholesterolaemia and in common an effective adaptogen. Thus the plant is an important component of many polyherbal preparations. The reviewed herb is safe and further research is required to examine efficacy and safety. Clinical trials should also be conducted for a variety of conditions.

KEYWORDS: Ashwagandha, Indian ginseng, Ayurveda, health beneficial application, Rasayana, Immunity, health, nutrition, Immunodulatory effects, antioxidant goods.

INTRODUCTION

Withania somnifera(WS), also known as ashwagandha, Indian ginseng, and downtime cherry, it has been an important condiment in the Ayurvedic and indigenous medical systems for over 3000 times. The roots of the factory are categorised as rasayanas, which are reputed to promote health and life by accelerating defence against complaint, arresting the geriatric process, revitalising the body in enfeebled conditions, adding the capability of the individual to resist adverse environmental factors and by creating a sense of internal wellbeing.[1] It's in use for a very long time for all age groups and both relations and even during pregnancy without any side effects.[2] In India, it's cultivated, on a commercial scale, in the countries of Madhya Pradesh, Uttar Pradesh, Punjab, Gujarat and Rajasthan.[3] Ashwagandha has also been honoured as having "adaptogenic " parcels, which may support a favourable response to the physical and internal stressors of a high- intensity exercise program.[4]

Mortal clinical and beast data in tablets, ranging from 250 to 1000 mg/ day, suggest that there's wider-angle of physiological goods that may lead to ergogenic benefits, including but not limited to anxiolytic, analgesic, Anti-inflammatory, anabolic, cardiopulmonary, and antioxidant goods.[5] An esteemed Rishi (sage) Punarvasu Atriya was the first person who gave the teaching regarding the use of Ashwagandha that extends back over 3000 to 4000 years ago wherein its use is widely extolled as a tonic particularly for emaciation in all age group of people. This causes enhancement of the reproductive function of both men as well as women.[6]

Taxonomical classification of ashwagandha

Family- Solanaceae

Kingdom- Plantae

Order- Solanates

Division- Magnoliophytes

Class- Magndiopsida

Genus- Withania

Species- W. Somnyfera

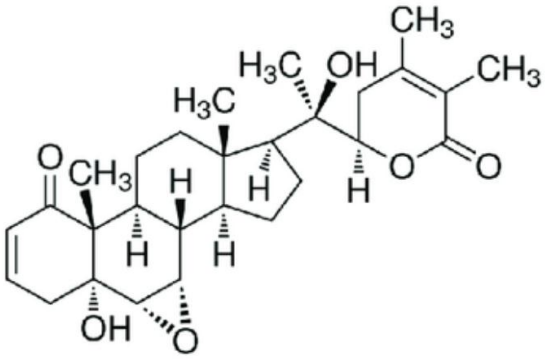
Common names**:** Ashwagandha, Indian ginseng, Indian Winter Cherry.

Chemical constituent of Ashwagandha

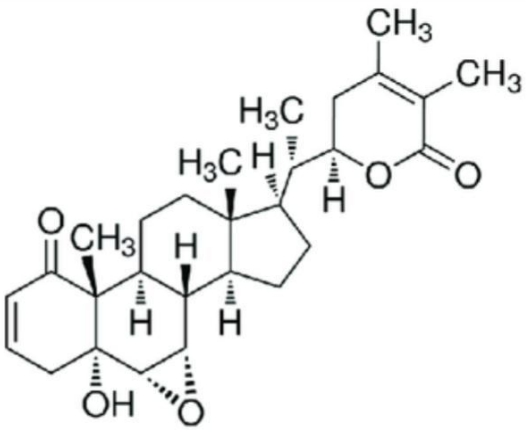
The Ashwagandha contain the alkaloids withanine the main constituent and somaniferine, pseudowithanine, tropineandpseudotropine, hygrine, isopellederrine, anaferine, anahygrine and steroid lactones.

The leaves steroid lactone, commonly known as withanolides. The various types of withanolides are.

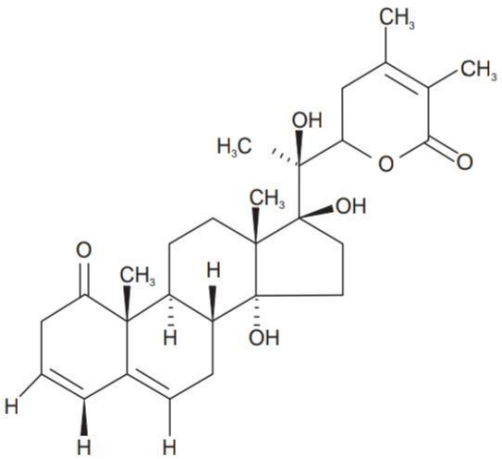
Withanolide A, Withanolide B, Withanolide D, Withanolide F(19).

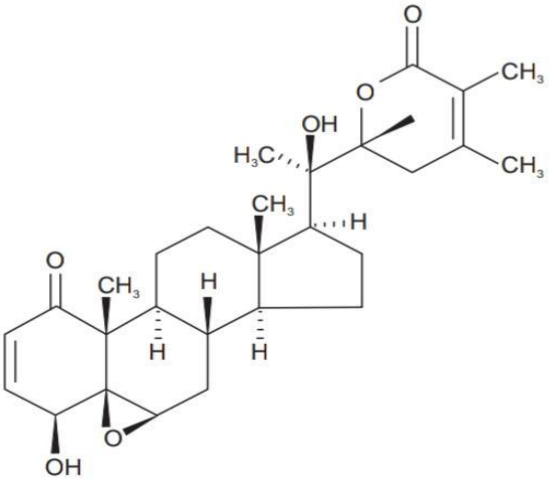


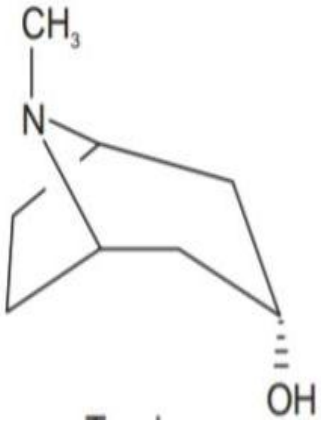
Withanolide A



Withanolide B

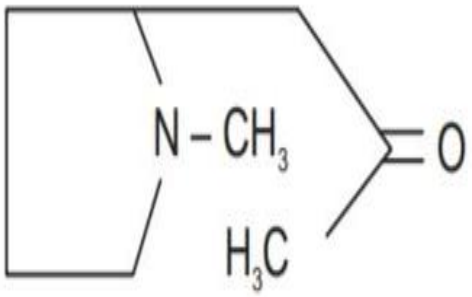






Withanolide F

Tropine



Withanolide D

Hygrine

Property and uses of ashwagandha

Biological role: It is used as Antioxidant. On oral administration, Ashwagandha churna showed a significant increase in Neutrophil adhesion and delayed- type acuity(DTH) response. It's concluded that Ashwagandha Churna Significantly potentiated cellular immunity.[7] Ashwagandha also provides multitudinous other benefits for your body and brain. For illustration, it can boost Brain function, lower blood sugar and cortisol Situation And help fight symptoms of anxiety and depression.

The whole plant of W. Somnifera shown in Fig 1.

Uses: A team of Portland medical researchers has found that Drinking whole cows' milk with Ashwagandha; an herb Used for more than 5,000 years in the practice of Ayurvedic medicine can increase the body's white blood Cells, which help boost immunity.[8] Ashwagandha has Long been considered as an excellent rejuvenator, a General health tonic and a cure for a number of health Complaints.

Ashwagandha is taken for treating cold and coughs, Ulcers, emaciation, diabetes, conjunctivitis, epilepsy, Insomnia, senile dementia, leprosy, Parkinson's disease, Nervous disorders, rheumatism, arthritis, intestinal Infections, bronchitis, asthma, impotence and a Suppressant in HIV/AIDS patients. Ashwagandha has Profound effects on the hematopoietic system, acting as An immunoregulatory and a chemoprotective agent.[9]

Fig 1: The whole plant of Withania somnyfera(L) Dunal.

Classical application of ashwagandha in regards with nutritional immunological & microbial property

Antioxidant goods

The brain and nervous system are fairly more susceptible To free radical damage the other apkins because they're Rich in lipids and iron, both known to be important in Generating reactive oxygen species. Free radical damage of Nervous towel may be involved in normal aging and Neurodegenerative conditions, e.g., epilepsy, schizophrenia, Parkinson's, Alzheimer's, and other conditions. The active Principles of WS, sitoindosides VII- X and withaferin A(glycowithanolides), have been tested for antioxidant exertion Using the major free-radicals scavenging enzymes, shperoxide Dismutase(SOD), catalase(CAT), and glutathione peroxidase(GPX) situation sinthe rat brain an teriorcortex and striatum. dropped exertion of these enzymes leads to accumulation of poisonous oxidative free revolutionaries and performing degenerative goods. An increase in these enzymes would represent Increased antioxidant exertion and a defensive effect on Neuronal towel. Active glycowithanolidesofWSwere given Once diurnal for 21 days, cure- related increased in all enzymes Were observed; the increases similar to those seen with Deprenyl known antioxidant administration. This implies that WS does have an antioxidant effect in the brain, which may be responsible for its different pharmacological parcels.[10]

In another study, an waterless suspense of WS root Excerpt was estimated for its effect on stress convinced lipid Peroxidation(LPO) in mice and rabbits. LPO blood situations Were increased by lipopolysaccharides (LPS) from Klebsiella Pneumoniae and peptidoglycans(PGN) from Staphylococcus Aureus. contemporaneous oral administration of WS excerpt Avertedan increaseinLPO.[11] Piecemeal from hepatic lipid Peroxidation(LPO), the serum enzymes, alanine Aminotransferase, aspartate aminotransferase and lactate

Dehydrogenase, were assessed as indicators of hepatotoxicity. Silymarin(20 mg/ kg,p.o.) was used for comparison. Iron Load convinced pronounced increase in hepatic LPO and serum situations of the enzymes, which was downgraded by Glycowithanolides(WSG) in a cure-related manner, and by Silymarin.[12]

Immunomodulatory effects

Extract of W. Somnifera has been shown to significantly increase the Cell Mediated Immunity (CMI) in normal mice. Root extract enhances the level of interferon gamma (IFN-γ), interlukin-2 (IL-2) and granulocyte macrophage colony stimulating factor (GM-CSF) in mice, suggestive of an immunopotentiating and myeloprotective effect. Ashwagandha enhances nitric oxide synthases activity of the macrophages, which in turn increases the microbial killing power of these immune cells.

Powdered root extract from Ashwagandha has profound effect on production of healthy white blood cells thereby it is an effective immunoregulator as well as chemoprotective agent in mice. The delayed type of hypersensitivity is also inhibited by this extract along with enhancement of phagocytic activities of macrophages while comparing with a control group. It has been found that the nitric oxide activities of the macrophages are enhanced by W. Somnifera via induction of nitric oxide synthase enzyme activity. The plant is also responsible to cause down regulation of the senescence-specific beta-galactosidase activity.[13]

Active against microbes and infection

Due to rapid emergence of antibiotic resistant strains of bacteria, treatment of infectious diseases is becoming challenging day by day and at the same time rapidly developing bacterial resistance is growing as a matter of global concern. This alarming health concern particularly due to the continuous increase of immunocompromised patients demands various alternative therapeutic modalities such as bacteriophage, panchgavya, cytokine, herbal therapy and others, Herbal therapy is an ancient revered therapy which is again gaining the momentum in lieu of need of alternative novel therapies and with least or no side effects this therapy is rapidly speeding the steps.[13]

General health benefits

Milk supplemented with Ashwagandha has been reported to increase total proteins and body weight. It has a rejuvenated effect on the body mainly on the reproductive and nervous systems and is used to improve vitality and aid in recovery after chronic illness.[13]

Anti-stress agent

Ashwagandha is a potent anti-stress agent. It checks stress induced changes in adrenal function and augments protein synthesis.[14]

CONCLUSION

The extensive survey of literature revealed that Withania somnyfera is an important source of many pharmacologically and medicinally important chemicals, such as withaferins, sitoindosides and Various useful alkaloid and it also has most effectively nutrition booster property as it boost the level of testosterone hormone in male. In Indian variety thirteen Dragendroff positive alkaloids have been reported. The Withanolides are the most searched chemical constituents of WS and till date around 138 withanolides with both β and α Side chain has been reported apart from various amino acid And other normal plant constituents. The plant has also been Widely studied for their various pharmacological activities like Antioxidant, anxiolytic, adaptogen, memory enhancing, Antiparkinsonian, antivenom, antiinflammatory, antitumor Properties. Various other effects like immunomodulation, Hypolipidemic, antibacterial, cardiovascular protection, Sexual behaviour, tolerance and dependence have also been Studied. Although the results from this review are quite Promising for the use of WS as a multi-purpose medicinal Agent, several limitations currently exist in the current Literature. While WS has been used successfully in Ayurvedic Medicine for centuries, more clinical trials should be Conducted to support its therapeutic use. It is also important To recognize that WS extracts may be effective not only on Isolation, but may actually have a modulating effect when Given in combination with other herbs or drugs.

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