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***Withania somnifera*: An Ancient Medicinal Herb.**

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ABSTRACT

Withania somnifera, better known as Ashwagandha (family-Solanaceae) is an important medicinal herb that has been used in Ayurveda and other medicine systems for more than 3000 years. *Withania* contains a wide variety of phytoconstituents that exhibit different medicinal functions. Studies show that ashwagandha has a tonic antioxidant, regenerative, antiepileptic, cardioprotective, anticortisol, antidepressant, anxiolytic, anti-inflammatory, anti-arthritis immunomodulatory activity. hypolipidemic, antibacterial, hypoglycemic, cardiovascular protection, sexual function, tolerance and dependence have been studied with the use of Ashwagandha. It has also been found to be effective in non-neurodegenerative diseases such as Parkinson's, Huntington's and Alzheimer's diseases. It has an imitative effect of GABA and has been shown to promote the formation of dendrites. . These results suggest that these herbs should be studied extensively to confirm and produce other important therapeutic effects.

Keywords: Ashwagandha, diuretic, anticortisol, adaptogen, anxiolytic.

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INTRODUCTION

Ashwagandha (*Withania somnifera*, family-Solanaceae) is best known as "Indian Winter cherry" or "Indian Ginseng". It is one of the ancient herbs of Ayurveda (a traditional Indian herb) used for peace as a Rasayana for its various health benefits. Known as "Sattvic Kapha Rasayana" Herb. Most Rasayana remedies are anti-stress / adaptogen agents. Ashwagandha is usually found in churna, a powder that can be mixed with water, ghee or honey. Improves brain function and nervous system [1].

In Ayurveda Ashwagandha has a powerful function of arousal, excitement, rejuvenation and life-enhancing action. It is also used as a general rejuvenating tonic known as Medharasayana, which means 'what promotes good reading and memory' and for birth defects. This plant was traditionally used to promote youthful vigor, endurance, strength, and health, to increase physical activity and increase the production of essential drinks, muscle fat, blood, lymph, semen, and cells. Similarities between these restorative structures and those of ginseng roots have led to Ashwagandha roots called Indian ginseng [2].



Synonyms [3]

Sanskrit: Ashwagandha, Turangi-gandha;
English: Winter Cherry;
Hindi: Punir, asgandh;
Bengali: Ashvagandha;
Gujrati: Ghodakun, Ghoda, Asoda, Asan;
Telugu: Pulivendram, Panneru-gadda, panneru;
Tamil: Amukkura, amkulang, amukkuram-kilangu, aswagandhi,
Kannada: Viremaddlinagadde, Pannaeru, aswagandhi, Kiremallinagida;
Punjabi: Asgand, isgand;
Rajasthani: Chirpotan

Description [6]

Macroscopic Characters

The roots show a buff to the outer yellowish color and wrinkles of length. They have no branches, straight, conical and some of them carry a crown. The root crown has many scars on the shoots. The roots are bitter in taste and the fresh roots have a horse-like odor (hence the ashwagandha). The fracture is smooth and powdery.

Microscopic Characters

The TS of root shows edoliated cork which is flexible nonlignified root segment with 2-4 layers of phellogen and about 15-20 rows of phelioiderm, clearly showing the vascular tissue components such as cambium, comprising 3-5 layers of the tangential elongated cell region. phloem parenchyma, sleeve tubes and matching cells. The second's xylem is strong enough to cause irregular veins damaged by medullary radiation. The opposite part of the stem base shows the pith, pericyclic fibers, xylem with tracheids, fibers, and starch grains [6].

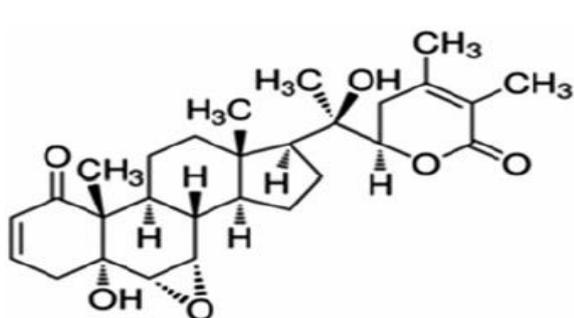
Cultivation and Collection

Withania somnifera is spread by division, cut or seed. Seeds are the best way to propagate them. Seeds planted in wet sand will germinate in 14-21 days at 20 ° C. *Withania somnifera* needs full sun to provide a little shade with a well-opened alkaline soil mixture. Plants do best when soil pH is 7.5-8.0. A mixture of sand with two layers of sand in the sand will be better. Plants are allowed to dry well during irrigation. In containers, too much water causes root rot. Plants are fertilized once a year with the same fertilizer.

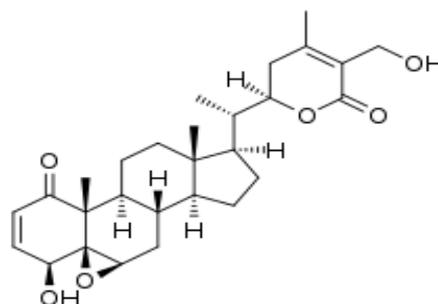
Chemical Composition

The chemistry of the *Withania* species has been studied by several groups of chemical compounds such as steroidal lactones; alkaloids, saponins, flavonoids, tannins etc. are identified, extracted, and separated.[4]. The chemical elements of *Withania somnifera* such as withaferin A, withanolide D, withaniamides and play an important role in its medicinal properties. Proteins such as *Withania somnifera* glycoprotein and withania lectin-like proteins have powerful therapeutic properties such as antimicrobial, anti-snake poison poison. The withanolides have C28 steroidal nucleus with C9 side chain, with a six member lactone ring, 12 alkaloids, 35 withanolides, and several sitoindosides from *Withania somnifera* have been isolated and studied [5].

Other alkaloids are somniterine, somnine. semniferinine, withananine, pseudo-withanine tropine, picudo tropine, 3-a-gloyloxytropane tholine, ciscolygrine, isopelletierine, anaferine and anahydrine Two acy steryl glucosides namely. Situindoside VII and sitoindosade Vill are separated at the roots [6].



Withaferine



Withanolide A

Taxonomical Classification:[3]

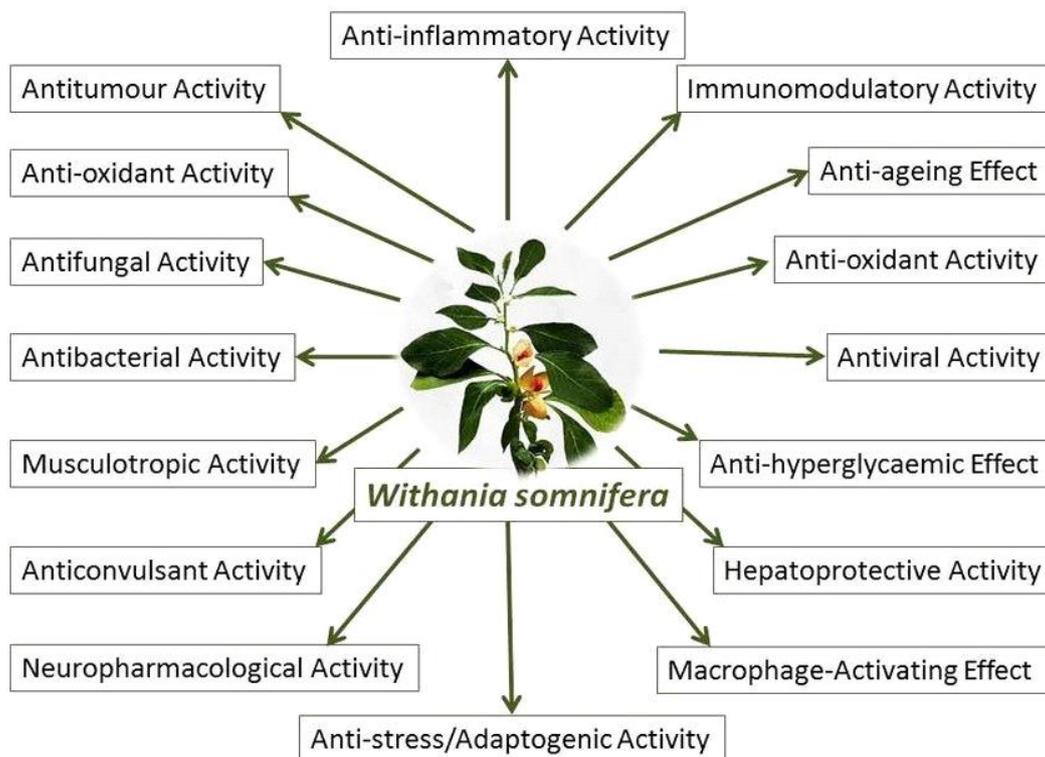
Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Solanales
Family	Solanaceae
Genus	<i>Withania</i>
Species	<i>W. somnifera</i>

Classical Use Of Withania

Ayurveda, a traditional medical system practiced in India can be traced back to 6000 BC. For 6000 years Ashwagandha has been used as a Rasayana. Ashwagandha root is considered a tonic, aphrodisiac, narcotic, diuretic, anthelmintic, astringent, thermogenic and stimulant. After treatment it gives strength to the horse and this root smells like a horse ("Ashwa"), hence the name Ashwagandha. It is also useful for leucorrhoea, abscesses, acne, flatulent colic, worms and fungi [7].

Pharmacological Uses Of *Withania somnifera*

W. somnifera has been used as an antioxidant, adaptogen, aphrodisiac, hepatoprotective, antiinflammatory agent and astringent and more recently as an antibacterial, antihyperglycemic and antifungal, as well as to treat ulcers and mild dementia [7].



Cardioprotective Activity

The extraction of *Withania somnifera* was tested in the cardiovascular system and respiratory system of dogs and frogs. Alkaloids had a hypotensive, bradycardiac, and prolonged respiratory stimulation in dogs. Cardioinhibition occurs due to ganglion blockade. *Withania somnifera* has shown strong cardio protective activity in the experimental model of isoprenaline-induced myonecrosis in mice [8].

Anticortisol Activity

Ashwagandha helps lower cortisol levels in people who are very depressed. Cortisol is a hormone that suppresses the adrenal glands and regulates blood sugar levels. Cortisol is also known as the "stress hormone" due to adrenal gland secretion due to stress and when blood sugar levels drop dramatically. Cortisol levels can rise indefinitely which can lead to high blood sugar levels and increase stomach fat storage. Studies have shown that Ashwagandha can help lower cortisol levels [9].

Antiulcerogenic Activity

Ashwagandha was found to be useful in the overcome of stress-induced ulcers of the gastrointestinal tract.

Antidepressant Activity

One experimental study show that Ashwagandh help to reduce severe depression. In a 60-day experiment in stressed adults, those who take 600mg/day reported a 79% reduction in severe depression. Simultaneously the placebo group reported a 10% increase [10].

Anxiolytic Effect

Ashwagandha created a cool feeling of dizziness similar to the drug Lorazepam in all three common anxiety tests: a high-maze plus, social networking and inactivity in an unfamiliar environment. In addition, both Ashwagandha and Lorazepam, reduced the level of tribulin in the rat brain, the last sign of clinical anxiety, when levels were increased following administration of the anxiogenic agent, pentylenetetrazole [11].

Ashwagandha also shows an antidepressant effect. Research supports the use of Ashwagandha as a mood enhancer in clinical situations of anxiety and depression.

Numerous human studies have shown that it can reduce symptoms in people with anxiety disorders. One 6-week study revealed that 88% of patients who took Ashwagandha experienced a decrease in anxiety, compared to 50% of people who took placebo³⁰. A study conducted in the Department of Medicine, a medical science center at the University of Texas has revealed that the release of Ashwagandha produces a GABA-like activity that may cause side effects of anxiety. This produces a cool and cool effect [12].

Anti -Inflammatory Effect

Several animal studies have shown that Ashwagandha helps to reduce inflammation. Human experimental studies have found that it increases the activity of natural killer cells, which fight infections. The anti-inflammatory effect is usually caused by Withaferinin A. *Withania somnifera* has been shown to have anti-inflammatory properties in a variety of inflammatory diseases such as carrageenan-induced inflammation, adjuvant arthritis and cotton pellet granuloma [13].

Anti-Arthritic Effect

Ashwagandha is a good analgesic that reduces the pain response from the nervous system. The powerful anti-arthritic properties of Ashwagandha are now widely accepted and documented; it is also found to act as an antipyretic as well.

Ashwagandha (1000 mg / kg / oral) produced significant analgesic activity of rats subjected to heat analgesia in the form of hot plate. The analgesic prostaglandin and 5-hydroxytryptamine are involved in Ashwagandha's analgesic activity studied with treatment with paracetamol (100 mg / acyproheptadine, however, the effect of Ashwagandha's paracetamol was 78.03% in the second hour of administration. Pain mediators; has failed to show any significant change in its performance [17].

Effect On Neurodegenerative Disease

Ashwagandha supplements can increase brain function, memory, response times and ability to perform tasks. In patients with Alzheimer's disease, the leading cause of dementia is neuritic atrophy and synaptic loss, according to the results of neuropathological post-mortem brain analysis. There are many studies showing that Ashwagandha decreases, stops, reverses or eliminates neuritic atrophy and synaptic loss. So Ashwagandha can be used. These results suggest that these vegetables should be studied extensively to confirm and reveal other potential therapeutic effects

Antibiotic Activity

The antibiotic activity of the withania roots and leaves has recently been shown experimentally. Withaferin A in concentration of 10 μ g/ml inhibit the growth of various gram-positive bacteria, acid-fast bacteria, aerobic bacilli, and pathogenic fungi. It was active against *Micrococcus pyrogenus* var aureus [14].

Immunomodulator Activity

In one animal study, Ashwagandha showed significant variability in immune response. Ashwagandha has been found to prevent myelo-suppression in mice treated with three immunosuppressive drugs. Ashwagandha treatment has been found to significantly increase Hemoglobine concentration, RBC count, platelet count, and body weight in mice [15].

Effect On Fertility

Ashwagandha helps to increase testosterone levels and significantly increases sperm quality and quantity and improves fertility in men. In a study of 75 infertile men, the group treated with Ashwagandha increased sperm count and mobility [16].

Precautions And Warning For Use Of Ashwagandha [18,19]

Pregnancy: may not be safe to use ashwagandha during pregnancy. There is some evidence that ashwagandha can cause abortions.

Breastfeeding: There is not enough reliable information that can be used safely while breastfeeding. Stay on the safe side and avoid use.

Auto-Immune Disorder: Ashwagandha can cause the immune system to work harder, and this can increase the symptoms of autoimmune diseases. If you have any of these conditions, it is best to avoid using ashwagandha. eg. multiple sclerosis, lupus (systemic lupus erythematosus), rheumatoid arthritis or other conditions.

Surgery: Ashwagandha can slow down the central nervous system. Health care providers are concerned that anesthesia and other medications during and after surgery may exacerbate this effect. Stop taking ashwagandha at least 2 weeks before scheduled surgery.

Thyroid Disorder: Ashwagandha can increase thyroid levels. Ashwagandha should be used with caution or avoidance if you have a condition or are taking thyroid hormone medications.

CONCLUSION

The above scientific findings support the conclusion that Ashwagandha is a potent tonic, with antiepileptic, cardioprotective, anticortisol, antidepressant, anxiolytic, anti-inflammatory, anti-arthritis and immunomodulators. such as anolides, sitoindosides, withaferine A, andania and other important chemical compounds with high purpose medicinal values. More than 80% of the world's population in 2001 used herbal medicine in their primary health care. Herbal medicine is used to treat various ailments and illnesses in the world because of its belief in its limited side effects. We conclude that *Withania somnifera* is the most potent herb in the world.

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