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*Original Article*

# Review on Ashwagandha

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## ABSTRACT

*Withania somnifera* or "Ashwagandha" is generally utilized as a folk medicine to cure different diseases. According to Indian Traditional System (Ayurveda), Ashwagandha is considered as one of the most significant medicinal plant and the best adaptogenic. It is a primary source from where we get withanolides (steroidal lactones), a class of phytochemicals which are utilized as main constituent in numerous formulations endorsed for several ailments. It is referred as a sedative, diuretic, mitigating, mainly used for boosting up the energy, endurance and acts as an adaptogen that exerts a solid immune stimulatory system. It is specially used as nervine tonic. Ashwagandha is utilized for treating cold and cough, ulcers, gauntness, diabetes, conjunctivitis, epilepsy, a sleeping disorder, feeble dementia, sickness, Parkinson's illness, joint inflammation, intestinal contaminations, bronchitis, asthma, ineptitude and sexual problem in patients.

**Keywords:** Ashwagandha, Rasayana, Withaferin A, Anti-stress, Anti-Parkinson, Glycoside

## INTRODUCTION

In traditional medicinal system number of diseases has been cured by using plants or plant products. The interest has been developed to use herbal plants for their distinctive therapeutic properties because of their common cause, cost viability, and insignificant results. *Withania somnifera* Dunal (Ashwagandha, WS is generally used in Ayurveda, the traditional medicinal system of India. It's another name is "Indian Winter Cherry" Or "Indian Ginseng". The roots of this plant are considered to be a rasayana, or best adaptogen. Rasayana means an herbal or metallic formation that promotes a stable state of mental and physical health. It has been a significant medical plant in indigenous clinical system for more than 3000 years. There are about 450 Ayurvedic medicinal plants in which 56 popular plant or one of their ingredients of Ayurvedic prescriptions are available for neurological disorders. *Withania somnifera* (Linn) Dunal is specially used for neurotic action. It holds the most prominent place and also known as "Sattvic Kapha Rasayana" herb in Ayurveda literature. The roots of the plant have a horsey smell (in Sanskrit, ashva means "horse" and gandha means "smell") *Withania* is accounted to have 23 species and out of which *Withania somnifera* (Linn) Dunal and *Withania coagulans* Dunal are of high restorative importance. In Ayurveda it is classified as rasayana and expected to advance physical and emotional health, re-establish the body and increase the life span. It is notable for its activities like Immuno-modulator. The plant having various properties, for example, anti-oxidative anti-stress, immunomodulatory anti-diabetic, anti-inflammatory, anti- microbial and cardio protective This may also enhance the endothelial function reduced reactive oxygen species, effective to aging effects anxiety and stress, arthritis, epilepsy, fatigue neurodegenerative disease thyroid and skin diseases. Ashwagandha is the main plant whose constituents are used in daily life as supplements for body and brain health. In present review authors explained the details description of the plant and their phytochemicals and their numerous therapeutic uses from ayurvedic and modern prospective.

### Botanical description of Ashwagandha (*Withania somnifera*)

Ashwagandha is small, typically erect, woody shrub, unarmed bush belongs to Solanaceae family. The plant grows up to 2 feet of height. Roots are fleshy, whitish brown and bristly covered. The roots are the significant part of the plant and used therapeutically. Leaves are simple ovate, petiolate, smooth, smaller and opposite. flowers are undistinguished, greenish or

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yellow, in axillary, umbellate cymes; small berries, globose, orange-red when mature, enclosed in the persistent calyx; seeds yellow, reniform. The bright red fruit is collected in the late fall and seeds are dried for planting in the spring season

**Geographical distribution**

Ashwagandha (*Withania somnifera* (Linn) Dunal) develops all through the drier parts and sub-tropical part of India. It is broadly found in North-Western India specially in Bombay, Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, Punjab and some mountain areas i.e., Himachal Pradesh and Jammu, rising to a height of 1500 meters. The species is widely distributed in many other countries like Pakistan, Afghanistan, Israel, Egypt, Jordan, Morocco, Spain, Canary Island, Eastern Africa Congo, South Africa.

**Phytochemical constituents of Ashwagandha (*Withania somnifera*)**

The phytochemicals of *Withania somnifera* are always of an interest for the researchers. This species has been studied by various researcher and groups of chemicals such as steroidal lactones, alkaloids, flavonoids, tannin have been extracted and identified. From the aerial parts, roots and berries of *Withania somnifera* more than 13 alkaloids, 138 withanolides, and several sitoindosides (a withanolide containing a glucose molecule at carbon 27) have been isolated. The change in environment may produce a new or unexpected secondary metabolic profile. Withanolides are the main chemical constituents of this plant mainly present in the leaves and roots. Their concentration of constituents falls between 0.001 to 0.5% of dry weight. These are group of C28-steroidal lactones raise on an ergostane structure in which C-22 and C-26 are oxidized to form a six membered lactone ring. A basic structure is designed as a 'withanolide skeleton'. Withanolide skeleton described as a 22-hydroxyergostan-26-oic acid, 22-lactone. Tempering of the carbocyclic skeleton or the side chain arise to various novel structure variants with anolides. Reported studies of the plants accumulating that these polyoxygenated compound possess enzymes capable of oxidizing all carbon atoms in the steroid nucleus. Withanolides and ergostane-type steroids having same characteristic feature of C8 or C9 side chain with a lactone or lactol ring. The lactone ring is six-membered which is fused with carbocyclic part of the molecule though oxygen bridge or C-C bond. The oxygen side chain may lead to the bond scission, new bond formation, ring aromatization and many other kinds of arrangements resulting in the novel structures. Major compound found in *Withania somnifera* is Withaferin A. whereas, *coagulin* L has been isolated in high amount in *W. coagulans.* Ashwagandhanolide is a unique thio-dimer of withanolide found in the plant48. There are 14,20-epoxide bridge specific to *W. coagulans* isolated from withanolides. Recently a novel chlorinated withanolide, 6achloro-5b,17a- dihydroxywithaferin A isolated from *W. somnifera*. Many other chemical constituents have been reported e.g. alkaloid in the roots, fruits and leaves, nicotine, somiferine, somniferinine, withanine, pseudowithanine, tropine, 3a-tigloyloxytropane, choline, cuscohygrine, dl-isopelletierine and new alkaloids anaferine and anhygrine in the medicinal plant. The plant also consists of chemical constituents like acylsteryl glucosides, starch, hantreacotane, ducitol and a various of amino acids such as aspartic acid, proline, tyrosine, alanine, gkycine, cysteine, glutamic acid, tryptophan, and iron.

**2.Folk view of Ashwagandha (*Withania somnifera*)**

Ashwagandha (*Withania somnifera*) is consumed as a folk medicine for various ailments. *Somnifera* is a Latin word which means "sleep-inducer" thus it's specially used as neuroprotective since the ancient time. It is consumed by folk in constipation and memory loss. The paste and powder prepared from the roots of ashwagandha is a great folk remedy for rheumatic pain, arthritis and heart disorders. Also useful in pulmonary tuberculosis, inflammation of joints, epilepsy, brain disorders and in several physiological ailments. Ashwagandha has role in the treatment of ulcers and tumors. In the northern part of India *Withania somnifera* is known as "Asgandnagori" or "Ba- dzigandha" and mainly indicated for the treatment of respiratory disorder, hepatic disorders, body strengthening and maintaining the hemoglobin level In Africa, Ashwagandha (*Withania somnifera*) was considered as the weed of contaminated and waste areas. The leaves of the plant were used for skin infections and inflammations. The fine root powder mixed with the

fat of animals (crocodile and python) for the treatment of sores and ulcers as an ointment In the Zulu tradition, roots of ashwagandha are used to protect people from black magic. It was also worked as boundaries for insects60. In China, ashwagandha was categorized as "Tonify qi" and "Tonify Blood and Essence"61 which nourished the heart, kidney, spleen and some other organ of the body.

**Ayurvedic view on Ashwagandha (*Withania somnifera*)**

Ashwagandha is Kapha (Water and earth component) and Vata (Air and space component) sedative. It is most commonly utilized restorative plant for the "Vata" constitution, which is related with air and space. It maintains the Vata energy and keeps up flexible skin and joints, a sound body weight, endurance, great mental capacity and a sound sensory system It is the rasayana herb which is utilized as a tonic for memory endurance and hormonal capacity. There are various therapeutic uses of this plant which is shown in curing Murchha (syncope), Apasmara (epilepsy), Shosha (cachexia), Unmada (craziness/psychosis), Karshya (weakening), Arsha (heaps), Prameha Pidika (diabetic carbuncle), Arbuda (tumor), Gandamala (cervical lymphadenitis), Bhagandara (fistula-in-ano), Guhya-vrana (ulcer in genitalia), Vatarakta (gout), Kushtha (illnesses of skin), Kilasa (vitiligo), Asthibhanga (bone break), Katigraha (stiffness in lumbo-sacral area), Gridhrasi (sciatica), Hanugraha (jaw spasming), JanuStabdhata (firmness of the knee), Hrudgraha (cardiovascular disappointment), Yoni dosha (issues of female genital lot) and Vidradhi (ulcer)

**Some significant properties of Ashwagandha in Ayurveda**

Vajikara - Increases sexual craving Rasayani - Revitalizes the body Balya - develops strength

Ati shukrala - Enhances quality and amount of semen Shwitrapaha - Useful in treating of white staining of the skin Shothahara - Useful in treating of edematous conditions and assists with clearing pollutants (Ama) from the different regions of the body.

Kshayapaha - Useful in treating thinness and under nutritive conditions

**Modern view on Ashwagandha (*Withania somnifera*)**

Herbal plants and chemical constituents derived from the plants represent more than 50% of drugs in modern medication system. For the economic development of world, pharmaceutical industry plays a major role69. The process of drug discovery has been revolutionized the development of a novel medicine. When we talk about the development of herbal medication, there is a serious concern about their processing and adulteration. Isolated compounds from these Natural plants undergoes various chemical processes or synthesis which alters the natural plants Today 80% of antimicrobial, cardiovascular, immunosuppressive drugs are of plant origin. *Withania somnifera* has led the pharmaceuticals to manufactures different products with various therapeutic uses such as sports nutrition, memory, ageing, immune support and weight management. In the market it is introduced mostly into three main part i.e., dietary supplement, cosmetic and beverages. The demand of dietary supplements has also been raised in United states. Due to these business instigating reasons; manufacturer is constantly innovating new herbal products in the market in which adulteration rate has increased and quality of herbal formulation is compromised somewhere.

**Reported therapeutic uses of Ashwagandha**

Various studies have been conducted on this plant to know its pharmaceutical and therapeutical uses. Large scale clinical studies are still needed to prove the clinical efficacy of this herb, especially in stress related diseases, neuronal disorders and cancers. Some reported studies on *Withania somnifera*

## CONCLUSION

*Withania somnifera* (Linn) Dunal is generally known as Ashwagandha in Ayurvedic system of medication. The plant has various pharmacological activities like Anti-stress, hepatoprotective, immunomodulatory, anti-arthritis, hostile to tumor, anti-ageing upheld by trial and clinical examinations. Further investigations will improve the support of its diverse activity on living beings. Although the review indicates that the Ashwagandha is a real potent agent which has a various traditional and modern uses.

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