



Article ID: SIMM0469

Popular Article

## ASWAGANDHA (*Withania somnifera*)

Rupali Shrivasini Parida, Prittam Das and Satya Narayan Satapathy

*Institute of Agricultural Sciences (IAS), Siksha 'O' Anushandhan, Campus-4,  
Bhubaneswar, Odisha-751029*

 Open Access

### Abstract

Demand for aromatic and medicinal plants in the market has increased as a result of the preference for plant-based medicine over allopathy. Since aswagandha is used to make both preventive and therapeutic medications, its demand skyrocketed during the COVID-19 pandemic. It is utilized to create therapeutic teas, powdered ingredients, pills, and syrups that promote healing, avoid weakness, return blood sugar levels to normal, and lessen tiredness, stress, arthritis, disability, excessive cholesterol, and stress. Every portion of ashwagandha has therapeutic benefits, but the root is highly prized in the marketplace. It is an annual herb that can withstand drought and is grown in rainfed areas and marginal soils, which encourages farmers to produce it on a big scale.

Key words: Aswagandha, Phytochemicals, withanolides

### Introduction

People's preferences are gradually moving from allopathy to plant-based Ayurveda therapy. Because of this, the market for aromatic and medicinal plants is expected to reach \$5 trillion USD by 2050, making it one of the fastest-growing and most promising industries. Because anolides are utilized to manufacture medicinal and preventive drugs, ashwagandha's demand spiked during COVID-19. The wild population of ashwagandha is the primary source of tuberous roots used in the pharmaceutical industry to make forskolin and withaferin.

### Plant parts contains Phytochemicals

#### PHYTOCHEMICALS OF ASWAGANDHA

In the plants two types of phytochemicals are present. 1. organic matters 2. Inorganic matters. Inorganic Matters are those which are free from carbon i.e. all electrolytes comes under inorganic matter. Organic



Matters are secondary metabolite products in plants. The roots contains calcium, Iron Manganese Phosphorus Potassium Sulphur minerals, and zinc-like heavy metal. Several preliminary phytochemical screenings indicated the presence of steroidal lactones, alkaloids, saponin, flavonoids, tannin, starch, phenolic content, carbohydrate, withanolides, sitoinosides, anaferrine, anahygrine,  $\beta$ -sitosterol, chlorogenic acid, cysteine, cuscohygrine, pseudotropine, withanine, scopoletin, withanamine, somniferinine, somniferine, tropanol, 14- $\alpha$ -hydroxywithanone, and 6,7 $\beta$ -Epoxywithanon (Saleem et al., 2020). Power and Salway, (1911) isolated phytochemicals viz., withanol, somnirol, somnitol, withanic acid, phytosterol, ipuranol, and alkaloids (such as somniferine, somniferinine, withamine, withanmine, pseudowithamine, and withanaminine, etc.) from the alcoholic leaf and root extracts of *W. somnifera*. The first withanolide isolated from *W. somnifera* was Withaferin-A by Lavie et al. (1965). Other withanolides present are Withanolide-A, Withanolide-E, Withanone, etc., (Ali et al., 2015; Saleem et al., 2020). The methanolic leaf extract showed the existence of tispelletierine, 3 $\alpha$ -tigloyloxtropine, cuscohygrine, hentriacontane, visamine, etc., (Afewerky et al., 2021) reducing sugars, ducitol,

starch, iron, and some amino acids such as glutamic acid, cysteine, tryptophan, etc., (Alam et al., 2011). In addition, steroids like cholesterol, diosgenin, stigmastadien, sitoinosides VII-X (Bharti et al., 2016) have been reported in the plant. Matsuda et al. (2001) isolated seven new withanosides glycosides viz., withanosides I-VII, and four known compounds such as withaferin A, 5 $\alpha$ ,20 $\alpha$  F (R)-dihydroxy-6 $\alpha$ ,7 $\alpha$ -epoxy-1-oxowitha-2,24-dienolide, physagulin D, and coagulin Q from the methanol root extract of *W. somnifera*. The presence of medicinally important constituents which can be confirmed the utilization of root for therapeutic medical treatment of diseases without any side effects.

#### UTILITY OF ASWAGANDHA

Anti-Alzheimer, Anti-Parkinson, Anti-arthritis, Anti-cancer, Anti-diabetic, Anti-hypoxic, Anti-inflammatory; Anti-ischemic; Anti-microbial; Anti-stress; Aphrodisiac; Cardio-protective; clinical evaluation; hepatoprotection; immunomodulatory; neuro-protective.

#### CONCLUSION

Ashwagandha is used as a household remedy by Indians. It is considered the best tonic for old people and children and an aphrodisiac by young people. Modern medicine and Ayurvedic treatment have



long been at conflicts with one another. Ayurveda has been recognized for its comprehensive approach to disorders and general health, whereas biomedicine or contemporary medications primarily deal with the decrease of pathology. Rasayana, a subfield of Ayurvedic medicine, seeks to prevent aging, boost intelligence and vigor, and strengthen the body's adaptability to illness. One of the best examples of the Rasyana medicinal plant, which has immunomodulatory, anti-cancer, anti-depressant, and neuroprotective qualities, is *Withania somnifera*.

#### Reference-★

M. Ahmad, S. Saleem, A.S. Ahmad, M.A. Ansari, S. Yousuf, M.N. Hoda, F. Islam Neuroprotective effects of *Withaniasomnifera* on 6-hydroxydopamine induced Parkinsonism in rats *Hum. Exp. Toxicol.*, 24 (3) (2005), pp. 137-147

M.K. Ahmad, A.A. Mahdi, K.K. Shukla, N. Islam, S. Rajender, D. Madhukar, S.N. Shankwar, S. Ahmad *Withaniasomnifera* improves semen quality by regulating reproductive hormone levels and oxidative stress in seminal plasma of infertile males *Fertil. Steril.*, 94 (3) (2010), pp. 989-996

N. Ahmed, A. Mahmood, A. Mahmood, Z. Sadeghi, M. Farman Ethnopharmacological importance of medicinal flora from the

district of Vehari, Punjab province, Pakistan *J. Ethnopharmacol.*, 168 (2015), pp. 66-78

S. Banerjee, U. Anand, S. Ghosh, D. Ray, P. Ray, S. Nandy, A. Dey Bacosides from *Bacopamonnieri* extract: an overview of the effects on neurological disorders *Phytother. Res.: PTR* (2021), 10.1002/ptr.7203

P.A. Dar, S.A. Mir, J.A. Bhat, A. Hamid, L.R. Singh, F. Malik, T.A. Dar. An anti-cancerous protein fraction from *Withaniasomnifera* induces ROS-dependent mitochondria-mediated apoptosis in human MDA-MB-231 breast cancer cells *Int J. Biol. Macromol.*, 135 (2019), pp. 77-87

S. Datta, P.C. Ramamurthy, U. Anand, S. Singh, A. Singh, D.S. Dhanjal, J. Singh Wonder or evil?: Multifaceted health hazards and health benefits of *Cannabis sativa* and its phytochemicals. *Saudi J. Biol. Sci.* (2021), 10.1016/j.sjbs.2021.08.036