

Review on Pharmacological Potential of *Withania somnifera*

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Abstract

Withania somnifera is a conventional medicinal plant. In India, it is widely used for treatment of many health conditions. The term 'Rasayana' is given to ashwagandha in ayurveda because it aid in the promotion of health and longevity. It also arrest ageing process increase capability of individual to resist environmental conditions. This medicinal plant can be used either single or in combination with other medicinal drugs. The different parts of ashwagandha has been derived which are widely used for drug formulation for curing many diseases with little or no associated toxicity. The various properties possessed by Ashwagandha include anti-inflammatory, anti-tumor, anti-stress, anti-oxidant, immunomodulatory, rejuvenating properties. It also gives a positive effect on the endocrine, cardiopulmonary and central nervous system. These encouraging results indicate that, this medicinal plant can be analyzed more vastly in order to confirm various other practicable therapeutic effects.

Keywords: Ashwagandha, Rasayana, Withanolide, *Withania Somnifera*.

1. INTRODUCTION

Plants are very important source of medicines and are widely used in various ayurvedic medicines According to WHO more than 20,000 species of medicinal plants which are used globally. Rasyana is an significant herb and is widely used for treatment of many disease. *Withania somnifera* is commonly called as ashwagandha. The term ashwagandha is originated from two Sanskrit words; Ashwa which means horse and gandha means smell. It is familiar with the name of Indian ginseng and winter cheery. *Withania somnifera* mainly distributed in cosy parts of the world. In India it is mainly found in the mountainous regions of northern western states like Punjab, Himachal Pradesh, Jammu upto an height of 1,500 m [1]. It is also used inhibitory effect on skin carcinogenesis, to calm the mind, build sexual energy and promote healthy sleep. There are two types of Asgand have been [2] Asgand Nagori [3]. Asgand Nagori is preferred more to the Asgand Dakani for its medicinal properties.

2. BOTANICAL CLASSIFICATION

Kingdom : Plantae

Division: Angiosperms

Class : Dicotyledoneae

Order :Tubiflorae

Family : Solanaceae

Genus : *Withania*

Species :*Somnifera*

2. MORPHOLOGY AND CHEMICAL COMPOSITION

2.1. Root

The root of the Ashwagandha has a vigorous smell which is described 'horse like'. These plants have whitish brown fleshy roots which is thicker at the bottom and thinner at the top. The roots of withania Somnifera contains amino acids , volatile oil, reducing sugars, glycosides.



Figure 1. Name this figure

2.2. leaves

The leaves of Ashwagandha is simple, long , thin. The colour of the ashwagandha leaves are green and colour of the leaves is same on both sides. The chief components of the ashwagandha shown by its chemical analysis are the steroidal lactones and alkaloids. Withanine is the chief component from various alkaloids. Withanolide are the steroidal lactone present in the leaves of withania. The principal components of the withania somnifera shown by its chemical analysis are the steroidal lactones and alkaloids



Figure2. Name this figure

2.3. Fruits

Fruits are small berries; green colour, after maturity , it attains orange red colour enclosed in membranous persistent calyx. Alanine, proline, glycine, valine, glutamic acid and cysteine are the amino acids which are present in fruits of Ashwagandha.



Figure3. Name this figure

2.4. Seeds

Seeds of withania somnifera are small , yellow and are flat.



Figure 4. Name this figure

3. PHARMACOLOGICAL ACTIVITY

There are a diversity of musculoskeletal diseases like arthritis, rheumatism; Withania somnifera medicinal drugs can be authorized to cure these conditions. Withania somnifera is an important medicinal plant used in ayurvedic medicines and is also prescribed as a cardioprotective , neuro protective, antiageing and antioxidant protection[2,3].

3.1 Anticancerous effect

Cancer is a hyperproliferate disorder that results in apoptosis, transformation and metastasis [4]. Every year, millions of people suffer and die because of various kinds of cancers. Withaferin A, a withanolide has been obtained from this plant and has been found that it has anti-cancerous activity. Water extract of Ashwagandha leaves has been found to show anti-cancerous activity both by in vitro and in vivo assays and triethylene glycol has been identified as active anti cancerous component. It has also been observed that water extract of Ashwagandha leaves is selectively cyto toxic to cancer cells and helps in in-vivo tumor suppression which is due to activation of tumor suppression proteins in ASH-WEX and PEG treated cancer cells. The cancer cell death can be induced when squamous cervical cell, Siha treated with ethanolic extract of roots of ashwagandha [5] Withanolide derived from W,somnifera are very useful for treating cancer cells because they suppress the expression of oncoprotein skp2.

3.2 Anti-inflammatory effect

Withaferin A is a naturally occurring steroids and it is a principal component of the withania somnifera have the anti-inflammotry activity. Its effectiveness is a hydrocortisone sodium succinate dose which is an anti-inflammatory drug. Its effectively suppress arthritic syndrome and it is non toxic in nature. Animal treated with withaferin A doesnot show any loss in weight as found as in case of hydrocortisone treated animal in arthritic syndrome. A dose of withaferin A in a average of 12-25 mg per ml body weight of albino rats gives a good response in its odema inhibiting activity.

3.3 Anti-stress

Ashwagandha has been used anciently used in order to stabilize the mood of patients suffering from behavioural disturbances. .It has been shown experimentally that Ashwagandha produce more antidepressant and anti-anxiety effects in comparison to imipramine which is an anti-depressant and lorazepam ,which is an anti-anxiety drug [6]. It improves reproducible and nervous system, rejuvenate body, improves vitality and recovery after chronic illness. Anti-stress activity of withania somnifera was conducted in rats using cold water swimming stress treatment and it was found that the drug treated animal show better stress tolerance[7] The extract of withania somnifera revealed that these extracts produces GABA like activity which may be responsible for its anti -anxiety for its anti-anxiety [8].GABA decreases neuron activity and also inhibit over firing of nerve cells because it is a inhibitory neurotransmitter present in brain.. This GABA helps in producing a calming effect.

3.4 Anti-ageing

The various constituents of the withania somnifera was checked for its anti-ageing characteristics in a clinical trial. The Ashwagandha herb given to a group of 101 healthy males of 50 -59 years, at a dosage of 3 gms everyday for about 1 year. This medicinal herb helps in improvement of hair melanin ,hemoglobin and seated stature , serum cholesterol decreased. It also helpful to preserved nail calcium.

3.5 Sexual behavior

For enhancing cheerful sexual life Withania somnifera act as a powerful adaptogen. It has been noted that antimasculine effect attributed by the hyperprolactineic, GABAergic sedative activities of the extract .. The methanolic roots of withania somnifera helps to induce a marked impairment in libido, sexual performance, sexual vigour , and pensile erectile dysfunction. The extract

given to rats at a dosage 3000mg per kg day of 7 days. The results was administered 7 days and also post treatment by pairing male with female in 7th, 14th and 30th day. The result of increasing sexual growth by the withania somnifera ends the treatment.

4. CONCLUSION

Rasayana is the most important in Indian Ayurvedic because it contains various health benefits. This plant has potency to enhance the immunity, ageing. The growth of human cancer can be inhibited by the use of Withaferin A which is harvested from root and leaf of aswagandha. Traditionally, Aswagandha is used because of huge therapeutic potential to aid many diseases. Uptake of various parts of plant can defend body from many type of health issues. Different parts of various species contain phytoconstituents. Rasyana is rightly said that it is multi purpose medicinal agent because of its pharmacological activities.

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