**Withania somnifera** - an endangered medicinal plant from lohardaga district of jharkhand.

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**Abstract:**

*Withania somnifera* L. Dunal is an important medicinal plant that belongs to the family solanaceae. Due to the over exploitation from natural resources for medicinal purposes the plant has been listed as endangered hence IUNC has placedit in ‘red data book’. Recently this species has been spotted in jungal of lohardaga district of Jharkhand state.

**Keywords:** withania somnifera, endangered, medicinal plant, red data book.

**Introduction:**

According to red list of threatened species, 44 plant species are critically endangered, 113 endangered and 87 vulnerable. *Withania somnifera* proved to be 99.75% of the endangered medicinal plants (Sharma et al, 2010; Rahman, 1993 ). As over harvesting of *W. somnifera* that plant root is going to be endangered condition in the Southern India (Manickam et al, 2000). *W. somnifera* has been utilized in Ayurveda system of medicine for over 3000 years. It is decribed as an herbal tonic and healthy food in vedas and considered as ‘Indian Ginseng’ in traditional Indian system of medicine (Singh et al, 2006).

**Study Area:**

Lohardaga district is one of the twenty four districts of the Indian state of Jharkhand. The district is situated between 23° 30’ and 23°40’ north latitudes and 84°40’ and 84°50’ east longitudes. The district covers an area of 1491 km². Its two blocks, i.e kisko and senha have large area under dense forest cover. The forest cover is around 32-35 % of the total area of the district.

**Plant profile:**

Kingdom – Plantae

Order – Solanales
Family – Solanaceae
Genus – Withania
Species – *W.somnifera*

Botanical name – Withania somnifera.

**Taxonomic Description:**

*Withania somnifera* L. (Dunal) belongs to family solanaceae and is classically known for its rejuvenating benefits. It has recently been referred to as Indian ginseng for its reputed restorative benefits. The wild plant is generally an erect branching shrub, grows approximately up to a height of one meter (Sivanesan, 2008). This species is a dense, hairy, erect, tender perennial shrub growing 35-75 cm (14-30 in) tall. Tomentose branches extend radially from a central stem. Whole parts are covered with whitish stellate trichomes. Branching is extensive; leaves are simple, alternate or sub-opposite, ovate, entire, basis cunate, dull green, elliptic usually up to 10-12 cm (4-5 in) long.

The flowers are small, green and bell-shaped. Roots are stout, long tuberous, fleshy, and whitish-brown; the ripe fruits are orange red or red-yellow berry, smooth, up to 6mm in diameter. Seeds are yellow and 2.5 mm in diameter.

**English name:** Winter cherry.

**Unani name:** Asgand, Asgand Nagori.

**Hindi name:** Asgandha, Ashwagandha.

**Trade name:** Ashwagandha, winter cherry, Indian ginseng, poison goose berry.

**Ayurvedic name:** Ashwagandha.

The name ashwagandha is a combination of the sanskrit words, ‘ashva’ and ‘gandha’. The meaning of ashwagandha is smell reflecting that the root has a strong horse like order [1].

**Habitat:**

*Withania somnifera* (L) Dunal, is an erect, evergreen, perennial shrub and member of Solanaceae family is a widely used medicinal plant useful in the treatment of inflammatory, anti-tumour agent (Naidu *et al*., 2003). It is well known for years as an important drug in Ayurvedic Literature-Root of the plant reportedly exhibit antioxidant immunomodulatory and haematopoietic properties (Mishra *et al*., 2000). Ashwagandha roots used in Ayurveda and Unani medicines. Roots are prescribed as medicines for hiccups, several female disorders, bronchitis, rheumatism, dropsy, and stomach and lung inflammation and skin diseases. The ingredient in medicines prescribed for curing disability and sexual weakness in males (Joshi *et al*., 2010). Ashwagandha is considered to be one of the best rejuvenating agents in Ayurveda. It is reported to have antitumor, radiosensitizer, antistressor, immunomodulatory, antiinflammatory and antibacterial effects (Umadevi 1996; Archana and Namasivayam 1999; Uma Devi *et al*, 1992). It has been employed for numerous conditions in
traditional Asian therapies and for additional disorders in contemporary herbal practice.

A major traditional use of the herb is in ‘balancing life forces’ which may be regarded as an adaptogenic or antistress tonic effect. Thus ashwagandha is considered to be a general promoter of health, or a “rasayana” that promotes rejuvenation according to traditional Ayurvedic practice (Sangwan, N.2008). The roots are the main portion of the plant used therapeutically (Weiner and Weiner 1994). Ashwagandha is reported to have anti-carcinogenic effects in animal and cell cultures by decreasing the expression of nuclear actor- kappa B, suppressing intercellular tumor necrosis factor and potentiating apoptotic signalling in cancerous cell lines (Ichikawa et al., 2006).

**Chemical components:**

The main constituents of *Withania somnifera* are alkaloids and withanolides. Withanolides – which are triterpene lactones- withanolides, withaferin A, alkaloids, steroidal lactones, tropine and cuscohygrine [2]. Some 40 withanolides, 12 alkaloids and numerous sitoindosides have been isolated [3].

**Withanolide:**

CAS number:  30655-48-2

Molecular formula: $\text{C}_{28}\text{H}_{38}\text{O}_6$

Molecular weight: 470.6 g/mol

Structural name: Withanolide

The roots contain several alkaloids, withanolides, a few flavanoids and reducing sugars (Pandel et al., 2013). The active compounds reported in *W.somnifera* include withaferin A, withasomiferin – A, sitoindosides VII –X, 5-dehydroxy withanolide- R, 2, 3-dihydrowithaferin-A, withanoside I-VII, physagulin D (Jayaprakasam et al., 2003).

The active cintent of Indian *Withania somnifera* are withaferin-A and withanolide-D, both are present in leaves and roots of the plants and are used as a source of drugs. Total alkaloid content in the root of the Indian type has been reported to be between 0.13 to 0.31% of this plant showed antitumor and radio sensitizing effects in animal models (Sharma et al., 2009).

**Conclusion:**

The active pharmacological components of *Withania somnifera* constituents are
withanolides and alkaloids. Which are present in leaves and roots of the plants and are used as a source of drugs. Due to the medicinal value, these plants are collected and used as raw material for large-scale medicinal industry, leading to over-exploitation and it becomes an endangered plant species. One of the problems for commercial cultivation is, it takes long periods for seed germination strains productivity.

As it has been affirmed as an endangered plant by IUCN therefore it is a pressing need to conserve the plant by both in situ and ex situ multiplication. There is a great need of awareness among the local community regarding community based approach in conservation. Active participation from everyone is highly needed for the conservation of this valuable but endangered plant species.

References:


