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Ashwagandha: The Miracle Ginseng

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ABSTRACT

Withania somnifera (L.) Dunal is a plant of the Solanaceae family which is commonly known as Ashwagandha Indian ginseng, poison gooseberry and winter cherry. It is one of the ingredients of many ayurvedic formulations and general rejuvenators to increase energy, health, longevity and prevention of disease in athletes, elders and pregnancy. It is also used as a general energy-enhancing tonic known as Medha Rasayana which means that which promotes learning and good memory and in geriatric problems. The current study represents botanical information, medicinal applications, production and practices of Ashwagandha crop. There is a need for us to explore substitute, naturally accessible remedies for curing millions of people worldwide.

Keywords: Ashwagandha, Ginseng, Medicinal, Root, *Withania somnifera* L.

Ashwagandha or Asgand (*Withania somnifera*), Ashwagandha is a native medicinal plant grown all over central and north-western India, belonging to the Solanaceae or nightshade family known as Indian ginseng or winter cherry. It is an important ancient plant; in the traditional Indian systems of medicine, Ayurvedic and Unani, the roots were placed. It is in use for a very long time for all age groups and both sexes and even during pregnancy without any side effects (Sharma et al. 1985). It is a vertically growing, branching shrub, usually 1.50 m tall. In dry and sub-tropical areas, it grows well. Ashwagandha is a plant that is robust and drought-resistant. In most regions of South Asia, Ashwagandha grows abundantly and many closely related species happen to be as far away as Northern Africa. As a lucrative crop, the cultivation of Ashwagandha is regularly carried out in all the states of India. In areas with rainfall of about 500-750 mm and altitudes ranging from 600 to 1200 meters above sea level, the herb grows best. 20-32 0C is the optimum temperature range. Ashwagandha has historically been grown in areas that are not soundly irrigated and therefore not suitable for food crops due to the durability of the plant. It is a cash crop in fields where more profitable plants will not be suitable to grow. Even in moderate drought conditions, Ashwagandha cultivation is promising.

Other Names

Ajagandha, Amangura, Amukkirag, Asan, Asana, Asgand, Asgandh, Asgandha, Ashagandha, Ashvagandha, Ashwaganda, Ashwanga, Asoda, Asundha, Asvagandha, Aswagandha, Avarada, Ayurvedic Ginseng, Cerise d'Hiver, Clustered Winter cherry, Ghoda Asoda, Ginse, Ayurvédique, Ginseng Indien, Hayahvaya, Indian Ginseng, Kanaje Hindi, Kuthmithi, Orovale, Peyette, Physalis somnifera, Samm Al Ferakh, Samm Al Rerakh, Sogade-Beru, Strychnos, Turangi-Ghanda, Vajigandha, Winter Cherry, Withania, Withania somnifera.

International Scenario

It is a shrub cultivated in India, Sri Lanka and Pakistan. Its roots have been utilized for thousands of years by Ayurvedic specialists, also recognized as Indian ginseng.

National Scenario

The major crop-producing states in the country are Madhya Pradesh, Haryana, Gujarat, Punjab, Maharashtra, Uttar Pradesh and Rajasthan. It is cultivated in more than 5000 ha of Madhya Pradesh alone. Predictable production from its origins in India is higher than 15000 tonnes, with an annual requirement of approximately 7000 tonnes, requiring an increase in agricultural production and superior production.

Uses of Ashwagandha

There is some early evidence that the system is influenced by Ashwagandha and helps minimize swelling, both from arthritis and from fluid preservation. The fair advantages and risks for individuals, however, are not yet evident.

One research shows that a compound containing Ashwagandha has helped relieve the symptoms of osteoarthritis. As Ashwagandha is conventionally used in amalgamation with other herbs, it is not apparent which of the ingredients had the gain. In people with type 2 diabetes and decreased elevated cholesterol, Ashwagandha may help reduce blood glucose. Since Ashwagandha has sedative effects, it can help to alleviate

anxiety and stress-after all, the maximum amount has been suggested by human studies. Some preliminary studies that will help with epilepsy and amnesia, but these findings are too early to note as predicted whether human benefits can be increased.

Some laboratory studies of cancer cells have shown that the growth of Ashwagandha can be prevented. Animal studies have proven that Ashwagandha could improve the effects of radiation therapy. These are early outcomes, however. It is not known if Ashwagandha will support cancer patients.

For other health problems, like anemia, people use Ashwagandha. It is rich in iron and it has been shown to help improve hemoglobin. There is no evidence to support the advantages of ashwagandha for many of the opposite supposed applications.

In each of the wonderful rejuvenating agents of Ayurveda, Ashwagandha is taken into account to be one. The roots, seeds and leaves of Ayurvedic and Unani medicines are used in

Ashwagandha is mentioned in ancient Ayurvedic literature as a very important drug-the berries can be used as a rennet replacement to coagulate milk in cheese making.

In this plant, several kinds of alkaloids are present, of which Withanine and Somniferine are important. Withanolides, glycosides, glucose, five unspecified alkaloids (0.09%) and plenty of free amino acids are found in the leaves.

- The alkaloids are responsible for the pharmacological function of the roots. It has been stated that the total alkaloid content in roots of Indian types varies between 0.13% and 0.31%
- The antibiotic and anti-tumor activities, Withaferin-A have earned strong publicity. It is used by the indigenous drug system to treat carbuncles.
- The paste prepared from its leaves is used to treat tubercular inflammation, which is rooted in the healing of skin diseases, bronchitis and ulcers.
- Roots are primarily used in Rajasthan to treat rheumatism and dyspepsia; they are used to alleviate loin pain in Punjab and abortion in Sind. Warm leaves are often used in some areas to provide relief during eye illnesses.
- Roots are often used, however, to treat general and sexual deficiency in mortals.
- Fruits and seeds are natural diuretics. It is stated that leaves possess anthelmintic and febrifuge properties. Fevers are handled with an infusion of leaves.
- For pile therapy, both internally and externally, a decoction of the leaves is used. In the case of sore eyes, boils and swellings in the limbs, leaves are externally used for fomentation.
- It's useful as an insecticide to destroy lice infesting the body. For bed sores and cuts, an ointment prepared by boiling the leaves is beneficial.
- Leaf juice for anthrax pustules is also used.
- Ashwagandha contains chemicals that can help relax the brain, minimize inflammation (swelling), lower the level of pressure, and change the system.

Medicinal uses

Anxiety: There is some evidence that Ashwagandha can decrease symptoms of anxiety combined with deep breathing and a clear diet. The influence of Ashwagandha on anxiety alone is uncertain. It inhibited stress-induced gastric ulcers more effectively as compared to the standard drug ranitidine (Bhatnagar et al. 2005).

Attention deficit hyperactivity disorder (ADHD): Some clinical research shows that in children with ADHD, a mixed herbal product containing Ashwagandha can improve attention and impulse control. It is uncertain the impact of Ashwagandha alone.

A brain disease called cerebellar ataxia: Preliminary research suggests that ashwagandha could improve equilibrium in individuals with cerebellar ataxia in conjunction with an alternative type of medicine known as Ayurvedic therapy.

Diabetes: There is some evidence that in individuals with diabetes, Ashwagandha might reduce blood sugar.

High cholesterol: There is some evidence that in patients with high cholesterol, Ashwagandha could decrease cholesterol levels.

Male infertility: Some preliminary clinical evidence indicates that Ashwagandha in infertile men can improve the quality of sperm, but not the sperm count. Whether taking Ashwagandha will enhance fertility is not understood.

Arthritis: There is preliminary research that Ashwagandha, taken together with other ingredients in a specific supplement (Articulin-F), might improve the symptoms of arthritis. In osteoarthritis, the effect of Ashwagandha alone is uncertain.

Parkinson's disease: Experimental evidence indicates that Parkinson's symptoms are improved by a mixture of herbs, including Ashwagandha. There is no known impact of Ashwagandha alone on Parkinson's.

Tumors: Withania somnifera concentrates may forestall or repress tumor development in malignant growth patients, and propose a potential for improvement of new chemotherapeutic specialists (Pratibha et al. 2013).

- Tuberculosis.
- Liver problems.
- Swelling (inflammation).

Ulcerations: Ashwagandha in the treatment of fibroid tumors of the uterus showed a reduction of uterine bleeding tendencies and the disappearance of fibroids after long treatment (Abbas et al. 2005).

Stress: The utilization of Ashwagandha essentially decreases experiential and biochemical decrease of worry without unfriendly effects (Krutika et al. 2016).

- Inducing vomiting.
- Altering the immune system function.
- Preventing the signs of aging.
- Fibromyalgia.

Ashwagandha contains chemicals that can help relax the brain, minimize inflammation (swelling), lower the level of pressure, and change the system.

Chemical Constituents

- The methanol, hexane and diethyl ether extracts from both leaves and roots of ashwagandha were found.
- Alkaloid percentage in roots ranges from 0.13 to 0.31%. The roots of Withania somnifera are alterative, aphrodisiac, deobstruent, diuretic, narcotic, sedative and restorative. The pharmacological activity of the root is attributed to the alkaloids and steroidal lactones.
- The total alkaloid content in the roots of Indian types has been reported to vary between 0.13 and 0.3, though many high yields (up to 4.3 per cent) have been recorded elsewhere.
- Many bio-chemical heterogeneous alkaloids, including choline, tropanol, pseudotopanol, cuscokygrene, 3-tigioyloxytropana, isopelletierine and several other steroidal lactories. Twelve alkaloids, 35 withanolides and several sitoindosides have been isolated from the roots of the plant have been studied.
- A sitoindoside is a biologically active constituent known as withanolide containing a glucose molecule at carbon 27.
- Indian ginseng's pharmacological activity has been attributed to two main withanolides, withaferin A and withanolide D.
- Withaferin-A is therapeutically active withanolide reported to be present in leaves. In addition to alkaloids, the roots are reported to contain starch, reducing sugars, glycosides, dulcitol, withancil, an acid and a neutral compound.
- The amino acids reported from the roots include aspartic acid, glycine, tyrosine, alanine, glutamic acid and cysteine.

Characteristics of the plant

Ashwagandha is an annual herbal under shrub of about 30 cm to 120 cm height, minutely stellate and tomentose branches, branched to perennial, branched. The roots are fleshy, tapering, brownish-white. The leaves are ovate and there are greenish flowers. Orange-red berries are mature fruits.

Varieties

Jawaharlal Nehru Krishi Vishwavidyalaya, Madhya Pradesh has published a "Jawahar" high alkaloid variety that is short in stature and most suitable for planting at high density. The variety yields a cumulative withanolide content of 0.30 percent in dry roots within 180 days.

Climate

It is cultivated as a Kharif (late rainy season) crop. The semi-tropical areas receiving 500 to 750 mm of rainfall are ideal as rain-fed crops for cultivation. The root growth increases if one or two winter drops of rain are earned. During its growing time, the crop needs a relatively dry season. A temperature range of 20 ° C to 38 ° C and even low temperatures of as low as 10 ° C can be tolerated. From sea level to an altitude of 1500 meters above sea level, the plant grows.

Soil

Ashwagandha grows well with good drainage in sandy loam or light red soil with a pH range of 7.5 to 8.0.

Nursery

Ashwagandha is seed-propagated. In well-prepared nursery beds, fresh seeds are sown. While it can be sown in the main field by the broadcast process, the transplanting technique is preferred for enhanced efficiency and export purpose. For export, a nursery that is well maintained is a necessity. Via thorough mixing

with compost and sand, the nursery bed, typically raised from ground level, is prepared. For planting on 1 ha of the main field, approximately 5 kg of seed is needed. In the month of June-July, the nursery is set up. Just before the start of the monsoon, seeds are sown and loosely covered by sand. Within 5-7 days, the seeds germinate. In the main sector, about 35 days of older seedlings are transplanted.

Land preparation

To get the soil to a very well tilth, two to three ploughing and discing and/or harrowing should be performed before rains. FYM 25 tonnes per hectare for application, mixing and levelling of the area.

Transplanting

After the manure in the soil is well mixed, ridges are arranged at a distance of 60 cm. Good seedlings spaced 30 cm apart are transplanted. The spacing of 60 cm x 60 cm or 45 cm x 30 cm is often practiced in different locations. However, with a plant population of about 55000 seedlings per ha, a spacing of 60 cm x 30 cm is considered the most favourable.

Seed rate and sowing method

For broadcasting methods, a seed rate of 10 to 12 kg per ha is sufficient. They can also be sown in rows. The line-to-line approach is preferred as it improves the formation of roots and helps to effectively execute intercultural operations. The seeds are normally sown at a depth of around 1 to 3 cm. In both procedures, seeds should be coated with light soil. It is important to maintain a line to line space of 20 to 25 cm and a plant to plant space of 8 to 10 cm. Depending on soil fertility, the spacing/distance may be altered. The population maintained is usually elevated in marginal soils.

Seed treatment

Seeds should be prepared at the rate of 3 g / Kg of seed before sowing with Trichoderma viride to protect the seedlings from seed-borne diseases. Seeds should be handled with Thiram or Dithane M45 (Indofil M45) at a rate of 3 g / kg of seed before sowing to protect the seedlings from seed-borne diseases.

Intercultural practices

To maintain a plant population of about 30 to 60 plants per sq.m., mature seedlings raised by broadcasting method or sown in line in furrows should be narrowed by hand 25 to 30 days after sowing. The concentration of plants to be maintained at previous levels can depend on the soil's nature and fertility. If fertilizer is applied, the population should ideally be kept at a lower level. In general, weeding is important to keep the field clear of weeds, the first 20-25 days after sowing and the next 20-25 days after first weeding.

Manures and fertilizers

Heavy doses of manure and fertilizer are not required for the crop. Inorganic fertilizers are rarely supplied by farmers.

Organic manures / compost / vermin-compost react well to the crop. It is suggested to apply 10 t of FYM or 1 t of vermin-compost per ha. In standard fertile soils, the application of 15 kg of nitrogen and 15 kg of phosphorus per hectare is favourable for superior production. Application of 40 kg of N and P per ha is adequate in stumpy fertile soils to achieve elevated root yield.

Irrigation

Extreme rainfall or water is injurious for this crop. Light rainfall after transplantation ensures the enhanced establishment of seedlings. Life-saving irrigation may be provided, if essential. Under the irrigated situation, the crop can be irrigated one time in 10 days for enhanced results and superior root yield.

Pests and diseases

There are no recorded serious pests in the crop. Two or three Neem Astra sprays as the foliar spray was found to be extremely helpful against aphids, mites and insect attacks at 10 days per time the crop is harmed by insects.Diseases are reported that are similar to seedling rot and blight. Under elevated temperatures and humid conditions, seedling mortality becomes extreme. As previously accepted, the occurrence of disease can be reduced by the use of disease-free seeds and by giving adequate seed care before sowing. Furthermore, Neem cake can be used. It will save insects and nematodes from root damage. Also, the crop will be covered by following crop rotation, well-timed sowing, and ensuring adequate soil drainage.

Preparation of Neem Astra

Please acquire 25 Kg of Neem green leaves, raw cow dung 5 Kg, cow urine raw 25 liters, immerse in 400 liters of water for 48 hours, not including top closing. It should be open. Stir well clockwise and anti-clockwise. Filtrate the mixture. This is on influential Neem Astra. It

is generally utilized for every insect as a spray in 10 days period.

Harvesting

Drying of the lower leaves and yellow-red berries shows the maturity of the crop. From December onwards, the flowering and bearing of fruits start. By digging in January to March, that is to say, 150 to 180 days after sowing, the crop is harvested for roots. At the time of digging, there should be adequate moisture in the soil. Using a power tiller or country plough, roots are dug out or ploughed. Without harming even the small lateral roots, the taproot should be carefully pulled out.

Yield

Ashwagandha gives 3 to 5 q of dry roots and 50 to 75 kg of seeds/ha in well-managed fields within 180 days. The dry root yield goes up to 6.5 to 7.0 q /ha under scientific crop management. There are instances where farmers have achieved root yields as high as 1 t/ha. Commercially, roots of 6 to 15 mm diameter and 7 to 10 cm length are preferred. Alkaloid percentage in roots ranges from 0.13 to 0.31%.

Post-harvest Practices

By slicing the stem 1 to 2 cm above the ground, the roots are removed from the aerial portion. The roots are washed after digging, cut into small 7 to 10 cm pieces and dried in the sun or shade.

- Roots should dry to a moisture content of 10-12 percent.
- Root pieces can be classified according to their length and thickness in the following 3-4 grades:
- Root grade: root parts up to 7 cm and 1.0-1.5 cm in diameter, solid, bright and pure white.
- The root of B grade: Root parts up to 5 cm and 1 cm in diameter, light and white.
- The root of C grade: root parts up to 3-4 cm in length, less than 1 cm in diameter, strong, side branches.
- Lower Grade: Thin, semi-solid, very thick, yellowish, and chopped root bits.

There are stout and long roots in the top grade that get premium rates. It should be kept in tin containers to prevent moisture and fungal attacks on the dried roots. Berries are plucked individually by hand. To take out the seeds, they are dried and crushed.

Side effects

- Sugar and/or alcohol may be included in liquid preparations produced by this product.
- If people have diabetes, alcohol dependency, or liver disease, caution is advised.
- For use during pregnancy, Ashwagandha is not recommended. Before using this product, tell your doctor. Because of the possible risk to the child, breastfeeding is not prescribed when this product is being used.
- Individuals with digestive disorders and ulcers need not use Ashwagandha.

Market

These markets for the procurement of Ashwagandha roots are visited every year by importers, buyers within the world, processors, traditional practitioners, Ayurvedic and Siddha drug producers. Acknowledgment of the restorative and the monetary advantages of these plants are on increment in both creating and industrialized countries (John, 2014). As indicated earlier, the annual domestic demand for Ashwagandha roots is around 7000 tonnes. Since production in India is much lower than about 1500 tonnes, the internal market itself has a high potential.

Conclusion

Ashwagandha is used as a household remedy by Indians, who consider it as the best tonic for old people and children and as an aphrodisiac by young people. It is one of the best nervine tonics of Ayurveda, the most ancient system of Medical Sciences. There is a need for us to explore substitute, naturally accessible remedies for curing millions of people worldwide.

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