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Medicinal Properties of Ashwagandha (*Withania somnifera*) and Their Uses

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ABSTRACT

Ashwagandha is an important medicinal plant of Asian and African origin. The therapeutic use of this plant is reported in immune-modulation, hematopoiesis, anti-aging, chronic stress, cardiovascular protection, hypothyroidism, anxiety and depression. The secondary metabolite from the roots of this plant is not only a major source of several alkaloids which include Tropine, Pseudotropine & Somniferine, but important steroids like withaferin A and withanolides are also useful for human beings as pharmaceutical agents in curing various diseases. Among its medicinal properties and uses are curing inflammation of tubercular glands, treating mainly rheumatism and dyspepsia, providing comfort during eye diseases, treating bed-sores and wounds, among others. Ashwagandha has anticancer properties, is able to reduce stress and anxiety, symptoms of depression and increase muscle mass and strength. This paper reviewed the medicinal properties of Ashwagandha and their uses.

Keywords: Withania Somnifera, Ashwagandha, Medicinal, Alkaloids, Plant

INTRODUCTION

Withania somnifera also known as ashwagandha, an important medicinal plant, is a plant in the Solanaceae or nightshade family. The several other species in the genus *Withania* are morphologically similar. Although commonly used as a medicinal herb in Ayurvedic medicine, there is no conclusive clinical evidence that it is effective for treating any ailment. The ashwagandha is an important medicinal plant of Asian and African origin. The therapeutic use of this plant is reported in immune-modulation, hematopoiesis, anti-aging, chronic stress, cardiovascular protection, hypothyroidism, anxiety and depression [1]. The secondary metabolite from the roots of this plant is not only a major source of several alkaloids viz: Tropine, Pseudotropine & Somniferine, but also important steroids like withaferin A and withanolides are useful for human being as pharmaceutical agents in curing various diseases.

Medicinal Properties and Uses

The medicinal properties of *Withania Somnifera* are as follows:

- Many types of alkaloids are found in this plant, out of which 'Withanine' and 'Somniferine' are important.
- The leaves contain five unidentified alkaloids (0.09%), withanolides, glycosides, glucose and many free amino acids.
- The pharmacological activity of the roots is attributed to the alkaloids. The total alkaloid content in roots of the Indian types has been reported to vary between 0.13 and 0.31 per cent.
- The drug is mainly used in Ayurvedic and Unani preparations. Withaferine-A has been receiving good deal of attention because of its antibiotic and anti tumor activities. It is used for curing carbuncles in the indigenous system of medicine [4].
- The paste prepared out of its leaves is used for curing inflammation of tubercular glands and that of its roots for curing skin diseases, bronchitis and ulcers.
- Generally, the roots are used for curing mainly rheumatism and dyspepsia; they are also used to relieve loin pain and in Sind for abortion. In some areas warm leaves are also used for providing comfort during

eye diseases. However, roots are mostly used for curing general and sexual weakness in human beings [9].

- It is fruits and seeds are diuretic in nature. Leaves are reported to possess anthelmintic and febrifuge properties. An infusion of leaves is given in fevers. For the treatment of piles, a decoction of the leaves is used both internally and externally.
- The leaves are also used as hypnotic in alcoholism. Externally, leaves are used as fermentation for sore eyes, boils and swellings of hands and feet.
- As an insecticide, they are useful for killing lice infesting the body. An ointment prepared by boiling the leaves, in fact, is useful for bed-sores and wounds.
- The fresh leaf juice is also applied for anthrax pustules.

Reduce Blood Sugar

- In different studies [3, 4, 6], ashwagandha has been shown to lower blood sugar levels.
- One test-tube study found that it increased insulin secretion and improved insulin sensitivity in muscle cells. Also, several human studies have confirmed its ability to reduce blood sugar levels in both healthy people and those with diabetes.
- Additionally, in a four-week study [5], on people with schizophrenia, those treated with ashwagandha had an average reduction in fasting blood sugar levels of 13.5 mg/dL, compared to 4.5 mg/dl in those who received a placebo.
- This is a important that's more, in a small study in six people with type 2 diabetes, supplementing with ashwagandha for 30 days lowered fasting blood sugar levels as effectively as an oral diabetes medication.

Anti-Cancer Properties

- Animal and test-tube studies have found that ashwagandha helps induce apoptosis, which is the programmed death of cancer cells [7].
- It also impedes the growth of new cancer cells in several ways.
- First, ashwagandha is believed to promote the formation of reactive oxygen species (ROS) inside cancer cells, disrupting their function. Second, it may cause cancer cells to become less resistant to apoptosis.
- Animal studies suggest that it may help treat several types of cancer, including breast, lung, colon, brain and ovarian cancer.
- In one study [9], mice with ovarian tumors treated with ashwagandha alone or in combination with an anti-cancer drug had a 70–80% reduction in tumor growth. The treatment also prevented the spread of cancer to other organs.

Reduce Stress and Anxiety

- Ashwagandha is perhaps best known for its ability to reduce stress [2].
- Blocked the stress pathway in the brains of rats by regulating chemical signaling in the nervous system.
- Many controlled human studies have shown that it can effectively reduce symptoms in people with stress and anxiety disorders as well
- In a 60-day study [2], in 64 people with chronic stress, those in the supplemental group reported a 69% average reduction in anxiety and insomnia, compared to 11% in the placebo group.
- In another six-week study, 88% of people who took ashwagandha reported a reduction in anxiety, compared to 50% of those who took a placebo.

Reduction in Symptoms of Depression

- It has been thoroughly studied [8]; a few studies suggest ashwagandha may help alleviate depression.
- In one controlled 60-day study [6] in 64 stressed adults, those who took 600 mg of high-concentration ashwagandha extract per day reported a 79% reduction in severe depression, while the placebo group reported a 10% increase.
- Only one of the participants in this study had a history of depression. For this reason, the relevance of the results is unclear.
- Boost Testosterone and Increase Fertility in Men
- Ashwagandha is supplements may have powerful effects on testosterone levels and reproductive health [1].

- In one study in 75 infertile men, the group treated with ashwagandha showed increased sperm count and motility.
- It also reported that the group who took the herb had increased antioxidant levels in their blood.
- In another study, men who received ashwagandha for stress experienced higher antioxidant levels and better sperm quality. After three months of treatment, 14% of the men's partners had become pregnant.

Increase in Muscle Mass and Strength

- That the ashwagandha may improve body composition and increase strength.
- In a study [7] to determine a safe and effective dosage for ashwagandha, healthy men who took 750-1,250 mg per day of pulverized ashwagandha root per day gained muscle strength after 30 days.
- In another study [3], those who took ashwagandha had significantly greater gains in muscle strength and size. It also more than doubled the reduction in body fat percentage, compared to the placebo group.

Reduction of Inflammation

- Several animal studies have shown that ashwagandha helps decrease inflammation
- Studies in humans have found that it increases the activity of natural killer cells, which are immune cells that fight infection and help you stay healthy
- It has also been shown to decrease markers of inflammation, such as C-reactive protein (CRP). This marker is linked to an increased risk of heart disease.
- In one controlled study, the group who took 250 mg of standardized ashwagandha extract daily had a 36% decrease in CRP, on average, compared to a 6% decrease in the placebo.

Improvement of Brain Function

Test-tube and animal studies suggest that ashwagandha may reduce memory and brain function problems caused by injury [9].

- Research has shown that it promotes antioxidant activity that protects nerve cells from harmful free radicals. In one study, epileptic rats treated with ashwagandha had nearly a complete reversal of spatial memory impairment. This was likely caused by a reduction in oxidative stress.
- The ashwagandha has traditionally been used to boost memory in Ayurvedic practice; there is only a small amount of human.
- In one controlled study, healthy men who took 500 mg of standardized extract daily reported significant improvements in their reaction time and task performance, compared to men who received a placebo.
- Another eight-week study in 50 adults showed that taking 300 mg of ashwagandha root extract twice daily significantly improved general memory, task performance and attention

CONCLUSION/RECOMMENDATION

Ashwagandha has anticancer properties, is able to reduce stress and anxiety, symptoms of depression and increase muscle mass and strength. There is need to largely explore the medicinal properties of this plant, and deploy it for beneficial pharmaceutical uses.

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