

Review Article on Ashwagandha Used for Treatment of Mental and Physical Health.

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ABSTRACT

In recent years, there has been a rise in studies showing the health benefits of winter cherry (*Withania somnifera*), also known as Ashwagandha. Research has found that it may help with various health issues, such as protecting the brain, improving sleep, reducing stress, and boosting energy. It also shows promise in reducing inflammation, fighting infections, supporting heart health, and helping control blood sugar levels. Some studies suggest it may even improve reproductive health and have positive effects on hormone balance. This growing body of research suggests Ashwagandha could be a valuable natural remedy for many health concerns. This review looks at the latest findings, as well as any safety issues or warnings about its use.

KEYWORDS:- Ashwagandha, *Withania somnifera*, winter cherry, herbal medicine, plant extract, antimicrobial activity, anticancer activity, anti-inflammatory activity .

I. INTRODUCTION

Indian ginseng is also called Indian winter cherry, Ashwagandha, or *Withania somnifera*. The part of the plant used for medicine is the root. The name "Ashwagandha" comes from the word "ashwa," which means horse, because it's believed that eating the root gives you strength like a horse. The second part of the name, "gandha," means fragrance and refers to the unique smell of the fresh root [1].For centuries, Ashwagandha has been used in Ayurvedic medicine to help strengthen the nervous system. This is shown by its ability to help the body adapt to stress and improve overall health, known as its "rasayana" effects. The chart below shows the wide range of health benefits of Ashwagandha.

Fig no.1

Ashwagandha is used in Ayurvedic medicine because it is known to help treat anxiety, stress, and other health problems[2].The plant is also known for its anti-inflammatory properties and is considered one of the best herbs for treating neurodegenerative diseases, like Alzheimer's disease[3].

II. ACTIVE COMPOUND:-

Ashwagandha contains a variety of important natural chemicals. The specific compounds it has can vary depending on where it's grown. The key active compounds responsible for its effects are called withanolides and alkaloids. Withanolides are a group of compounds that have a specific structure and include substances like witanopherin A, witanolides A-Y, witanone, and others. Alkaloids in Ashwagandha include compounds like witanin, somniferin, tropin, choline, and several others. These compounds are shown in the chart below.

Fig no.2

ASHWAGANDHA UESD IN ALZHEIMER'S DISEASE :-

Alzheimer's disease (AD) is a progressive condition where a person gradually loses their ability to think and remember. This is linked to the buildup of plaques in the hippocampus, a part of the brain involved in memory[4].Herbal medicine provides several options to slow down the progress and symptoms of Alzheimer's disease (AD). Recently, there has been growing interest in creating and selling drugs made from medicinal

plants, and their importance in health-related areas is increasing. These plant-based products are carefully tested and made to be consistent, showing that they are both effective and safe for specific uses[5-9].

Ayurvedic medicine is a traditional healing system from India, where practitioners have developed various treatments and methods for different health problems. Many Ayurvedic texts focus on the nervous system and its disorders. These disorders, called 'VataVyadhi' in Sanskrit, are believed to be caused by imbalances in Vata, which is seen as the energy or "wind" that moves through the brain and nerves, controlling both voluntary and involuntary functions. When Vata is out of balance, it can lead to weakness, disturbances, or sensitivity in the nervous system. The texts also talk about memory loss in older adults and offer preventive and therapeutic treatments. While these texts describe the use of herbs for nervous system issues like memory loss, it is only recently that studies have begun to explore how these herbs work in treating conditions like Alzheimer's disease and other forms of dementia[10].

Ashwagandha is commonly used in Ayurveda as a tonic for the nervous system, an aphrodisiac, and an "adaptogen" to help the body cope with stress. It belongs to the nightshade family (Solanaceae), and its root is the most commonly used part. Ashwagandha is considered a "rasayana" (rejuvenative) herb, believed to have antioxidant properties, fight free radicals, and support the immune system. Unlike other adaptogens, which can be energizing, Ashwagandha has a calming effect, making it especially useful for people with Alzheimer's disease[11-15].

Withanolide A, a compound found in Ashwagandha, helps fight neurodegenerative diseases like Alzheimer's and Parkinson's. It was only recently discovered that withanolide A can cross the blood-brain barrier (BBB). In a study, adult mice were given three different doses of withanolide A through their nose (1 mg/kg, 5 mg/kg, and 10 mg/kg). This method allowed the compound to reach the brain areas like the cortex and cerebellum. After treatment, the mice showed less brain damage, improved blood-brain barrier function, and reduced brain swelling. The treatment also helped balance neurotransmitter levels that had been disrupted by previous brain injury. The highest dose (10 mg/kg) notably reduced damage to

brain cells, including cell death and tissue damage[16].

ASHWAGANDHA USE IN PARKINSON'S DISEASE

In Parkinson's disease, the nerve cells that produce dopamine in the brain (called dopaminergic neurons) begin to break down. This causes an imbalance between dopamine, which normally reduces brain activity, and acetylcholine and glutamic acid, which increase brain activity. Several factors can cause the damage to these nerve cells, including:

- Genetic factors
- Toxic substances from inside or outside the body
- Brain infections
- Oxidative stress (damage from free radicals)
- Low levels of growth factors
- A combination of these factors

Parkinson's disease is a bit more common in men than in women, and while the exact cause is unknown, it is believed that estrogen may offer some protection against the disease in women[17].

Anxiolytic and Anti-Stress Effects

Stress is the body's natural reaction to different pressures or challenges, whether they come from outside or inside the body. The way the body reacts to stress is called the stress response, and it depends on the type of stress, how often it happens, and how long it lasts. It's been observed that stress can disrupt the body's balance (homeostasis) and not only make symptoms of many diseases worse but can also be the main cause of some illnesses. People who are constantly under stress, whether from work or home life, are more likely to develop various health problems[18].

Stress is a natural reaction to situations that seem threatening or challenging. As more research highlights the effects of stress and anxiety, there's a growing interest in finding medical and alternative ways to reduce them and lead a more peaceful life. Stress and anxiety are seen as defense mechanisms that help the body respond to danger with a "fight-or-flight" reaction. This stress response is a complex process involving the body's physical and mental systems, and it's important for survival in tough situations. However, long-term or constant stress, caused by things like environmental or social pressures, can lead to serious health problems such as heart disease, high blood

pressure, depression, anxiety attacks, memory and thinking problems, digestive issues, fatigue, and immune system disorders[19-21].

In traditional Ayurvedic and Unani medicine, Ashwagandha roots have been used for a long time as an adaptogen, a substance that helps the body handle stress. Ashwagandha (*Withania somnifera*) belongs to the Solanaceae plant family. Its main use, known as "Rasayana," is to improve overall health and boost energy[22].

Adaptogens like Ashwagandha are effective in fighting fatigue, and research has looked into how it works on a molecular level. Studies have shown that Ashwagandha is a versatile herb with many benefits, including reducing inflammation, protecting the brain, helping the body adapt to stress, improving memory, supporting blood production, promoting sleep, and reducing anxiety[23-27].

This study aimed to test the effect of a water-based Ashwagandha root extract on reducing stress and anxiety in adults. While other studies have looked at Ashwagandha's effects on stress and sleep, this is the first to use a high-concentration extract and compare its effects at a low dose versus the usual recommended dose. This study is also the first to explore how different doses of the extract affect sleep quality, stress levels, and cortisol (a stress hormone). As a result, this study could be of interest to researchers in alternative medicine who are looking for herbal solutions to improve sleep and reduce stress.

Treatment of Sleep Disorders

Insomnia is when a person doesn't get enough sleep based on their needs, which affects how they function during the day. It's not just about getting less sleep at night; the problem is more complicated and can involve different issues like trouble falling asleep, staying asleep, or waking up too early. These sleep problems can happen even if a person follows good sleep habits. Insomnia can lead to feeling unwell, trouble concentrating, emotional issues, memory problems, and lack of motivation, which can affect both work and social life. Studies show that women are more likely to experience insomnia than men, and older age is also a factor. Sadly, many people are turning to sleep medications, which highlights how widespread the problem is. However, insomnia is often not properly diagnosed. Rates of insomnia vary by country, which may explain the differences in how it's diagnosed. Since we spend about 30% of our lives sleeping, sleep disorders can

significantly disrupt the body's balance and overall health[28].

A study was done on adult male rats where they were kept awake for one week to simulate sleep deprivation. The researchers measured markers of oxidative stress (damage caused by free radicals) and levels of serotonin and dopamine (important brain chemicals) using special tests. The sleep-deprived rats showed lower levels of antioxidant enzymes, which help protect the body from damage. However, rats treated with Ashwagandha (*Withania somnifera*) extract showed a significant reduction in free radicals and cell damage, and their antioxidant enzyme levels increased. Additionally, the levels of dopamine and serotonin were higher in the treated rats compared to those that weren't treated. The results suggest that Ashwagandha is a helpful treatment for sleep deprivation[29].

Fig no.4

III. VARIOUS FORMULATIONS OF ASHWAGANDHA :-

1. Ashwagandha Churna

Ashwagandha churna is a powdered formulation of the ashwagandha plant (mainly the roots) used for increasing the libido in males and treating various infertility issues.

2. Ashwagandha Arishtam

This health tonic is a liquid preparation of the ashwagandha herb for general debility and improving the immunity. Apart from being used for improving reproductive health for both men and women, it is also used for neural problems like depression, dementia, etc.

3. Ashwagandhadi Lehyam

Ashwagandhadi Lehyam is a semi-solid jam like preparation of ashwagandha which is prepared by adding jaggery or sugar and boiled with a specific liquid till the correct constituency is reached. The Lehyam is used for treating general weakness, fatigue, neuromuscular conditions, impotency, underweight, etc. This potent formulation improves immunity and is useful for treating arthritis, joint pain, back pain, and different breathing problems.

The active constituents of the Lehyam include ashwagandha, sariva, jeera, sugar, madhusnuhi, draksha, ghee, honey, ela and water for the decoction.

Fig no.5

IV. USES OF ASHWAGANDHA

- Anxiety. Taking ashwagandha by mouth might reduce anxiety.
- A type of persistent anxiety marked by exaggerated worry and tension. Taking ashwagandha by mouth seems to improve anxiety in people with persistent anxiety.
- Insomnia. Taking ashwagandha by mouth seems to improve overall sleep and sleep quality in some people.
- Stress. Taking ashwagandha by mouth seems to help reduce stress in some people. It might also help reduce stress-related weight gain.

V. OTHER EFFECTS OF ASHWAGANDHA

Some medical studies suggest that Ashwagandha may help in treating COVID-19 due to its many beneficial properties. It can support the immune system, reduce inflammation, lower harmful cytokines, protect organs, and has anti-stress, anti-high blood pressure, and anti-diabetic effects. This makes it a potentially useful addition to COVID-19 treatment and could also help with related health conditions. However, more research is needed. Some compounds from Ashwagandha, like witanoside V and somniferin, may block a key enzyme in the SARS-CoV-2 virus. Other compounds, like witanolides and withanone, also show antiviral activity, which could help in treating COVID-19[30-31].

VI. CONTRAINDICATION

Indian ginseng root extract has been used to treat male infertility, but men with hormone-sensitive prostate cancer should avoid it. Studies show that Ashwagandha can increase testosterone levels, which could make the cancer worse. It is also not safe for pregnant women or those planning to become pregnant, as taking high doses of Ashwagandha root extract may cause a miscarriage[33].

Studies suggest that Ashwagandha root extract may affect certain liver enzymes (CYP3A4 and CYP2B6), which could cause problems when taken with other medications. This could make the side effects of a drug worse or make the drug less effective. People who are taking medications for lowering blood sugar, blood pressure, or immune system suppression, or those with autoimmune

diseases, should talk to a doctor before using Ashwagandha[33].

VII. CONCLUSION

Ashwagandha has been used for centuries in traditional medicine, especially in Ayurveda, and research shows it has many health benefits. However, more studies are needed to confirm its therapeutic uses, figure out the best doses, and ensure its safety, especially when combined with other medications or supplements. While Ashwagandha root shows promise, it's important to continue updating knowledge about its uses and safety. Ongoing research, particularly clinical trials, is essential to better understand how it works and its potential for treating neurological disorders.

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