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## Ashwagandha extraction and its health benefits

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### Abstract

Ashwagandha (*Withania somnifera*, family Solanaceae), a subtropical undershrub is very effective herb in Ayurveda (Indian medicinal system). A number of therapeutic properties of this plant are sedative, hypotensive, anti-ageing, aphrodisiac, anti-inflammatory, Bradycardia, respiration stimulating, anti-tumour and radio-sensitizing. In Indian classical medication Ashwagandha root extract is utilized as a health tonic and is additionally prescribed for some common diseases of the reproductive tract, gastrointestinal disorders and for glandular swellings. We found that the cancer inhibitory leaf extract (i-Extract) has, at least, seven components that could cause cancer cell killing; In recent investigations it has been reported the protective free-radical-scavenging role of Ashwagandha root extract in mouse liver, the organ where most circulatory triiodothyronine (T3) is genera. Ashwagandha is also used as remedy for nervous disorders, rheumatism, arthritis, intestinal infections, bronchitis, asthma, impotence, a suppressant in HIV/AIDS patients, cold and coughs, ulcers, emaciation, diabetes, conjunctivitis, epilepsy, insomnia, senile dementia, leprosy and Parkinson's disease. Ashwagandha boosts the immune system, fights with inflammation, increases memory-power, and helps to maintain general health and wellness. According to Indian Ayurveda medication, Ashwagandha is known as one of the most significant herbs and the best adaptogenic. This herbs have chemical components like anahygrine, tropine, cuseohygrine, anahygrine, anaferine, glycosides and with anolide with amino acid and starches. With anolide contains some steroidal molecules which are a bled to fight inflammation. It is considered to rise the production of bone marrow, semen, and acts as an anti-aging agent. Ashwagandha boosts the immune system, fights with inflammation, increases memory-power, and helps to maintain general health and wellness.

**Keywords:** *Withania somnifera*, Reproductive health, Physiological and Immunological booster, Sedative

### 1. Introduction

The active components which we get from plant's extracts are about  $\frac{1}{4}^{\text{th}}$  of the all drugs which are used as medicines. India's traditional ayurvedic medicines have not only been considered as safe and effective, but also known for their availability and affordability to the human beings that either do not have access to the present-time medicine or cannot make them available for mankind. According to the survey of World Health Organization (WHO), more than 80% of population of developing countries still depends primarily on traditional herbal treatment for a number of diseases. *Withania somnifera* (Solanaceae family), known as Ashwagandha or Indian ginseng, is an essential medicinal herb that grows up to a meter in height on slightly basic and moist soil at a temperature range of 20–32 °C. Widely used in African, Indian & Unani traditional medicines, it has been classified by Who in GRAS (Generally Regarded As Safe) food substances [1-3]. Ashwagandha is renowned for its enormous medicinal potential for a large number of diseases, including inflammation, brain and immune disorders, stress, cardiac and cancer [2, 4-11]. Although mechanisms of these activities have not been clarified by laboratory studies, some of these therapeutics' properties have been credited to its secondary metabolites. Some of these are alkaloids (tropine, psudotropine, 3-trigloyloxytropine, choline, anaferine, anahygrine and withasomnine), flavanol glycosides (6, 8-dihydroxykaempferol 3-rutinoside, quercetin and 3-rutinoside-7-glucoside), sterols, glycowithanolides (withaferin A, withanolide D, sitoindoside VII to X steroidal lactones and with an one) and phenolics [11-24]. Latin meanings of the species name *somnifera* is 'sleep-inducing' which means that it has sedative properties. It has been also utilized as an adaptogen and for sexual vitality. Some phytopathologists refer to *Withania somnifera* as Indian ginseng for its usage in Ayurvedic medicine in a way similar to that ginseng is used in traditional Chinese herbal medicine. In ayurvedic medication, the liquid extract of the roots is used for curing colds and chills and to improve the tone of uterus after child-birth and miscarriage. Adecoction of the root bark has been utilized for treatment of asthma.

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This is also a use which is common to traditional herbal practices in India. In ethno medicine, its root is used as an anti-inflammatory drug scrofula rheumatism, tumours and swellings; and as a sedating and hypnotic in anxiety neurosis. The leaves of Ashwagandha also possesses some medicinal properties like antibacterial, anti-inflammatory, hepatoprotective. Seeds and fruits of *Withania somnifera* both are diuretic. The berries are very good alternative of rennet, it

is also used to coagulate milk in cheese making. There are some studies which have proven that the utility of the Ashwagandha extract was approximately equal to the utility of the Panax ginseng extract. However, *Withania somnifera* has an advantage over Panax ginseng in that it does not appear to result in ginseng- abuse syndrome which is a condition characterized by water retention, high blood pressure, muscle tension, and insomnia [25-27].



<https://supplementsinreview.com/stress/aswagandha-stress/>

**Fig 1:** Ashwagandha root



<https://www.bing.com/images/search?view=detailV2&ccid=xnlQaRTF&id=B9913D6E734B00F3742592F97216566C7E838253&thid=OIP.xnlQaRTFVFSI5r2ZNXGnfAHaJ3&mediaurl=https%3a%2f%2f1.bp.blogspot.com%2f-SQ60ZWWvkZc%2fXsa2Azz6AWI%2fAAAAAAAAC4k%2fhOKM9AiLXokPb-KUro6v4NWgamWEIZ6LwCLcBGAsYHQ%2fs1600%2fAshwagandha%252Bplant.jpg&expf=981&expw=736&q=ashwagandha+plant&simid=608007996156695476&FORM=IRPRST&ck=D8407967DEFBCB6ED3C04D0C9972C279&selectedIndex=9&ajaxhist=0&ajaxserp=0>

**Fig 2:** Ashwagandha Plant

**Scientific Name:** *Withania somnifera*, Reproductive health, Physiological and Immunological booster, sedative

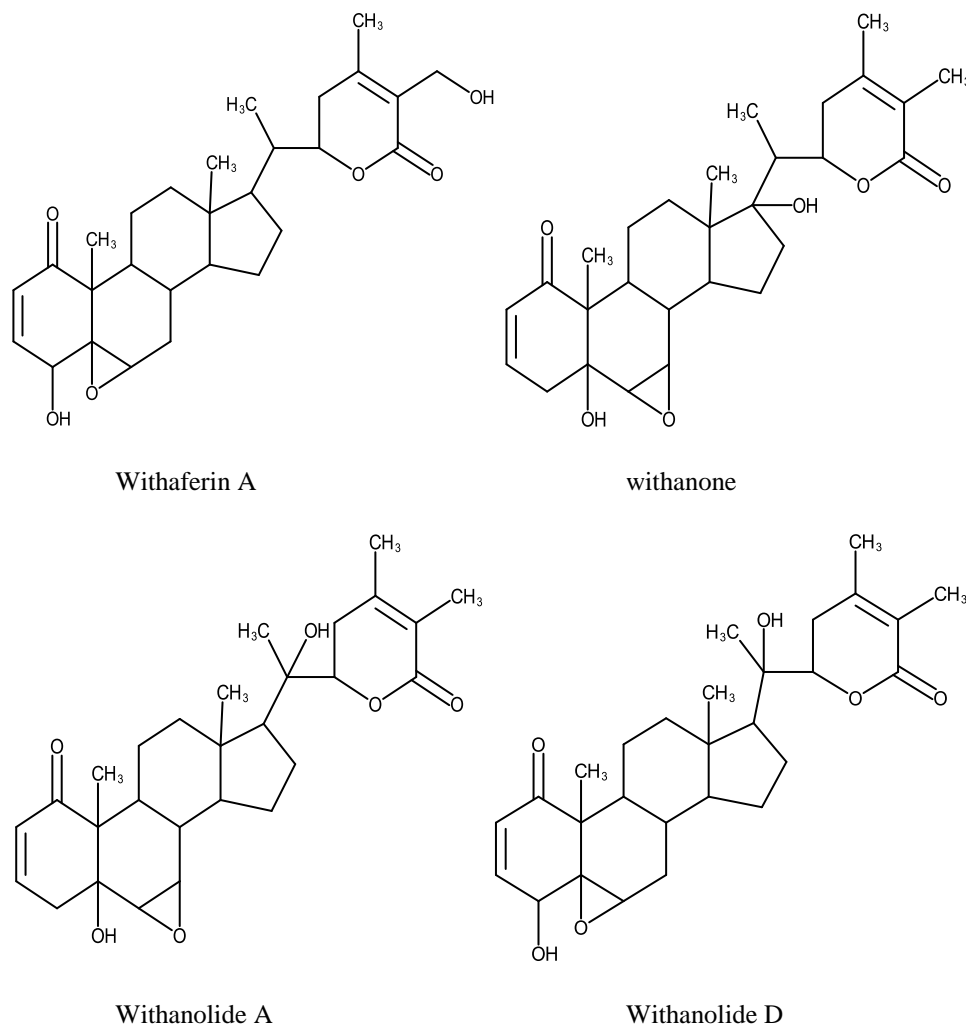
**Family:** Solanaceae

**Commonly known as:** Withania, Winter Cherry, Indian Winter Cherry, Indian Ginseng, Ashwagandha etc.

**Habitat:** Mainly drier parts of India [28].

#### 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 in nature. 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 much high yields (up to 4.3 per cent) have been recorded elsewhere. Many bio-chemical heterogeneous alkaloids, including choline, tropanol, pseudotropanol, cuscoygrene, 3- tigloyoxytropiana, isopelletierine and several other steroidal factories. 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 [29-30].



**Fig 3:** Different chemical constituents of Ashwagandha

[https://www.researchgate.net/figure/Some-withanolides-of-Ashwagandha-Withania-somnifera\\_fig1\\_235733546](https://www.researchgate.net/figure/Some-withanolides-of-Ashwagandha-Withania-somnifera_fig1_235733546)

### Description

Ashwagandha plant grows as a short shrub with the height of 35–75 cm with a central stem from which branches extend radially in a star pattern (also known as stellate) and covered with a thick layer of hairs (tomentose). The flowers of *Withania somnifera* are small and green in colour. The ripe fruit is orange-red in colour and it has milk-coagulating properties. Roots are long, brown, tuberous [31–32].

### Climatic conditions for growth

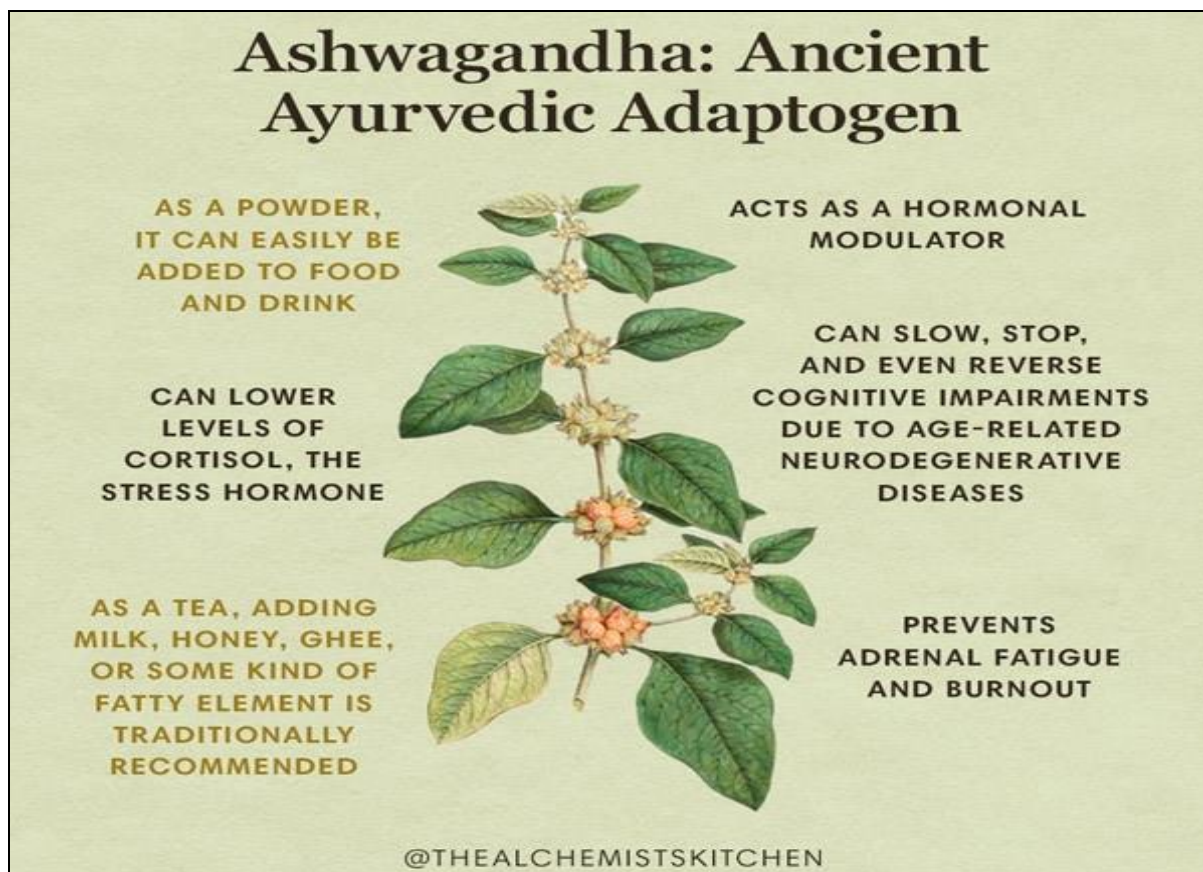
*Withania somnifera* is raised up in late rainy-season (kharif crop). Semitropical areas which are receiving 500 to 750 mm rainfall are suitable for its planting as a rainfed crop. If one or two winter rains can be received, then root development increases. (This crop needs a relatively dry season during its cultivation period). It has a capacity to tolerate a temperature range of 20 to 38 °C and as low a temperature as 10 °C. The Ashwagandha plant can grow from sea level to an altitude of 1500 meters [31].

### Useful preparations of Ashwagandha

- A paste which can be got from Ashwagandha leaves when applied on a local inflammation act as anti-inflammatory remedy [1, 7].
- Herbal massage oil which is prepared from Ashwagandha herb is beneficial in many conditions like sleeplessness, paralysis, epilepsy etc [1, 8, 10].

- A preparation of *Withania somnifera* which is mixed with honey, ghee and sugar is a very good ergogenic and improves semen quantity, sperm count, mobility & semen quantity. It is efficaciously used in low libido, erectile dysfunction and premature ejaculation [25, 27].
- Regular use of Ashwagandha churna helps to improve the conditions like rheumatism, senile debility in all cases of general debility, nervous exhaustion, spermatorrhoea, brain-fag, low of memory, loss of muscular energy and brain-fag. It boosts body energy and vigor. It helps to improve the body system which is disbalanced due to chronic diseases like rheumatism, syphilis etc. It also refills the lowered energy of body due to mental exertion, over-work thus it prevents early ageing [1, 10, 26, 27].
- A healthy remedy to reduce sweet cravings by making a preparation of Ashwagandha. For this preparation, we have to roast one ounce of Ashwagandha in ghee and add one tablespoon of date sugar. Then we have to keep it in a screw top glass jar in the refrigerator for further use. This can be taken in the morning about twenty minutes before breakfast, in the mid-afternoon if cravings of sweets arise and at bed time with a cup of hot milk (if cravings of sweets arise) [1, 30].
- Regular use of Ashwagandha is very beneficial for skinny children. It helps to improve the body weight and body energy [28, 31].





<https://wisdom.thealchemistskitchen.com/ashwagandha-ancient-ayurvedic-adaptogen/>

**Fig 4:** Ayurvedic adaptogen Ashwagandha

### 3.1. Preparation of crude alcoholic extract of Ashwagandha:

Crude alcoholic extracts of leaves & roots are prepared for chemical analysis. Dried roots or leaf powder is dipped in 85% ethanol in a ratio of 1:30 and incubated at a temperature of 85°C for two hrs in a reflux system. The extract which is assembled together after incubation is purified and concentrated by evaporation at a temperature of 60°C. The filtrate is freeze-dried for overnight. HPLC analysis of the extract is done. Finally purified and well characterized Withaferin A and withanone can be used as standards [33].

### 3.2. Hydroponic cultivation of Ashwagandha:

Hydroponic cultivation set-up can be established that contains culture chambers which are made of (i) automated ultrasonic

humidifier for moisture control, (ii) heat-insulated panels for temperature-control and (iii) high efficiency air duct and air conditioner system for airflow. The set-up is constructed to supply temperature-controlled air into the culture chambers. The CO<sub>2</sub> concentration in the chambers is monitored with the help of sensors and is balanced by supplying liquid CO<sub>2</sub>. Culture medium (liquid) which is stored in the container on the lowest rack in the culture chamber for plants was supplied by watering system (circulating pump) which can adjust the ingredients automatically. On the other hand, pre-treated seeds are sown in rockwool granule. After four weeks of seeding, the transplants are shifted to a hydroponic system under 25 °C (as indicated) in light/dark period with 16 h light period and raised up for 6 weeks. Stress treatments are begun one-two weeks (as indicated) before harvest [33].



<https://www.naturewise.com/blogs/blog/the-ultimate-user-guide-to-ashwagandha-benefits-uses-types-reviews>

**Fig 5:** Ashwagandha root extract



[https://www.bing.com/images/search?view=detailV2&ccid=9LYGQjqN&id=5C64E8B883EA9165F64D2CA980CF9C119C0E8A78&thid=OIP.9LYGQjqN5\\_29N6UINd\\_lnQHaHa&mediaurl=https%3a%2f%2fcdn.shopify.com%2fs%2ffiles%2f1%2f0551%2f4417%2ffproducts%2f91BahG3ZdFL-SL1500\\_1200x1200.jpg%3fv%3d1569406849&exph=1200&expw=1200&q=hydroponically+grown+Ashwagandha+seeds&FORM=IRPRST&ck=4C8229D37E0DDD1B60661367F8B1C01A&selectedIndex=55&ajaxhist=0&ajaxserp=0](https://www.bing.com/images/search?view=detailV2&ccid=9LYGQjqN&id=5C64E8B883EA9165F64D2CA980CF9C119C0E8A78&thid=OIP.9LYGQjqN5_29N6UINd_lnQHaHa&mediaurl=https%3a%2f%2fcdn.shopify.com%2fs%2ffiles%2f1%2f0551%2f4417%2ffproducts%2f91BahG3ZdFL-SL1500_1200x1200.jpg%3fv%3d1569406849&exph=1200&expw=1200&q=hydroponically+grown+Ashwagandha+seeds&FORM=IRPRST&ck=4C8229D37E0DDD1B60661367F8B1C01A&selectedIndex=55&ajaxhist=0&ajaxserp=0)

**Fig 6:** Ashwagandha Seeds

### 3.3. Preparation of cyclodextrin-assisted water extract of Ashwagandha leaves

Water extract (10% w/v) was prepared from Ashwagandha dried leave powder, as described earlier, by overnight extraction in sterile water at 40°C with slow shaking [25]. For cyclodextrin (CD)-assisted aqueous extraction of Ashwagandha leaves (CD-WEX), the dried leaf powder (10% w/v) was mixed with aqueous solution of alpha (10%) or beta (2%) or gamma (10%) CD. Then the mixture was put on stirrer for next 24 h at the temperature of 37°C with slow shaking (about 90 rpm) in TAITEC Bio-Shaker BR-43FL. The supernatant was filtered through 0.45-micron filter & the slurry was centrifuged at 3500 rpm for 10 min. The filtrate

(CD extract) was undergoing to bioassay and HPLC. The ratio of high withanone & withaferin was pointed out in the residual precipitate of gamma CD extraction. To identify the anticancer potential of these extracts, the active components were taken out from precipitate in DMSO as described above. The supernatant of DM extract which was got after centrifugation at 3500 rpm for 10 min was filtered through 0.45-micron filter and it was used for cytotoxicity assays. CD and DM extracts, obtained from dry leaf powder (10% by weight), were considered 100% and added to the cell culture medium in a range of 0.01 to 1% that corresponded to 10 µg to 1 mg/ml of leaf powder, respectively [34-35].

Health Benefits of Ashwagandha	
Stimulates thyroid gland and secretion of thyroid hormones	
Rich in antioxidant properties	Aids in improve vitality and fertility
Helps to reduce side effects of chemotherapy	Beneficial in treating diabetes and cataracts
Relieves stress, anxiety and depression	Helps to strengthen heart muscles and control cholesterol
Effective in controlling bacterial infections	Boosts immunity and increases production of blood
Provides relief from inflammation and pain	Useful remedy for treating seizures and convulsions
Caution: Avoid intake during pregnancy and avoid excess consumption	

<https://www.pinterest.com/pin/461830136766391529/>

**Fig 7:** Beneficial properties of Ashwagandha



### Medicinal values

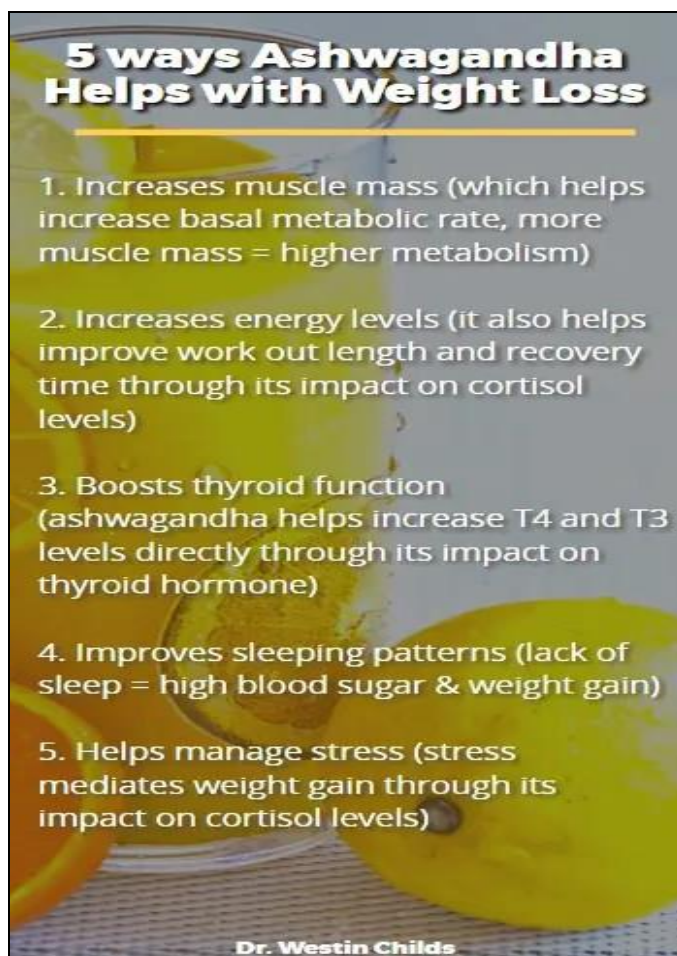
- This herb is used as a nontoxic adaptogen that works on a nonspecific basis to normalize physiological functions. It also performs on the HPA axis and therefore the system [1, 26, 32].
- Ashwagandha is efficacious for sleeplessness, however doesn't act as a sedative. Its renewal and nervine effects generate energy that helps the body to be settled and to sleep. Therefore, it helps our body to deal with a stress instead of masking it with sedatives which have different kind of side effects. It is an ayurvedic herb that eases stress and sleeping-disorders, rejuvenates our nervous system [10, 28, 36].
- Ashwagandha can be taken to decrease the blood pressure. It effects noticeably in stopping the formation of stress induced ulcers [36].
- In inflammatory disease, that involves dry, swollen inflamed and painful joints, Ashwagandha can be used as a remedy [30, 37].
- One of the most important properties of Ashwagandha is that it'll improve ojas (A/C Ayurveda Ojas is vigor which effects everything from our physical strength, digestion, immunity and our spiritual health, sleep and mood to our skin). So, Ojas is that the most delicate, refined level of physical health which is the outcome of healthy food which are digested in a proper way. It is very important for a healthy immune system, lustrous complexion,

physical strength, sense of Well-being and clarity of mind. It permits consciousness to flow inside the body. With diminished ojas, we are less connected to ourselves and we have a tendency to fall sick. Thus, we get a imbalanced life when there is lack of ojas. 'Ojakshaya' (diminished ojas) could be the cause of diseases just like AIDS/HIV [28, 30, 32, 38].

- By analyzing, it has concluded that extracts of the plant have a direct spermatogenic effect on the seminiferous tubules of immature rats probably by exerting a testosterone-like impact [25, 27].
- Ashwagandha will increase haemoglobin (red blood count) and hair pigment. It stabilizes the glucose level of blood and lowers the cholesterol [29].

### Ashwagandha for Weight Loss

Ashwagandha is a very common herb which is used in Ayurvedic medication. By its adaptogenic effects Ashwagandha can accelerate the weight loss process when it is utilized in combination with different weight loss enhancing supplements. Adaptogens are substance that helps to reduce stress associated fluctuations within the diet. This ancient Ayurvedic herb is believed to be utilised for those people who either uses to eat too much or people who uses to eat less due to environmental stress. Additionally, it may help to improve metabolism and remove irregularities in digestion [12, 26, 28].



<https://www.restartmed.com/ashwagandha/>

**Fig 8:** Ashwagandha in weight loss

### 4.2. Ashwagandha benefits

Ashwagandha is beneficial for different parts of our body parts and can be utilised as tonic or in oral form. Some studies

have concluded that Ashwagandha is very helpful in fighting against the following health problems:

1. Osteoarthritis: In the year 2008, in a study researchers

examined ashwagandha's effects on human's cartilage and it was found that the herb can help protect against inflammation and cartilage injury related to osteoarthritis [7, 16].

2. Anxiety: In the year 2000, scientists found in an animal-based study that Ashwagandha showed very effective result against anxiety effect just like lorazepam (a medication which is used to treat anxiety disorders). Additionally, this herb shows good results as an anti-depression medication [26, 36].
3. Type 2 Diabetes: Ashwagandha can help to be normalized high glucose level in our blood and improve insulin activity [25, 28].
4. Cancer: In a study of year 2003, research on human tumour cell lines discovered that ashwagandha can slow down the development of breast, lung and colon cells. In the year of 2007, another study on human cells revealed that Ashwagandha may inhibit tumour growth without any harming effect on healthy cells [5, 21, 35].
5. Anti-Oxidant: Ashwagandha has anti-oxidant property also. Previous studies have shown that it can eliminate free radicals from our system. Free radicals are agents that cause aging by breaking down of our body's tissue [30, 38].
6. Provide energy: There are some studies which show that supplementing with Ashwagandha can give us the energy which is required after finishing long workouts whereas additionally permitting for most recovery and cell re-growth [9, 19, 23].
7. General tonic: Ashwagandha can be a tonic that will increase sexual efficiency and sperm count. In the rural areas, vegetable which is made out of this herb is given to T.B. patients. Additionally, it will increase blood's iron percentage [1, 25, 27].

#### Ashwagandha Effects on the Brain Chemicals

GABA-mimetic activity of Ashwagandha having anti-anxiety impact [39]. Inhibiting the activity of enzyme Cholinesterase and thereby holding Acetylcholine (neurotransmitter) for more time [24, 25]. Turning down of tolerance of the analgesic effects of drugs [2, 10]. Regenerate neuritis and reconstruct

synaptic by induction of axon and nerve fibre outgrowth [24, 28].

#### Ashwagandha Immunostimulatory effect

Ashwagandha shows good result Immunity stimulating through Macrophages [40, 41]. It Raises protein titer against Bordetella pertusis strains thereby helps to fight against Diphtheria [30, 41]. Ashwagandha shows protecting effect in Cyclophosphamide which induces myelosuppression [17, 21]. It helps us as an anti-ageing agent and Copper brings out lipid peroxidation [12, 33, 36]. This ayurvedic herb is very beneficial in chronic fatigue syndrome [26, 28, 33].

#### Ashwagandha as an Adaptogenic and Anti-stress Agent

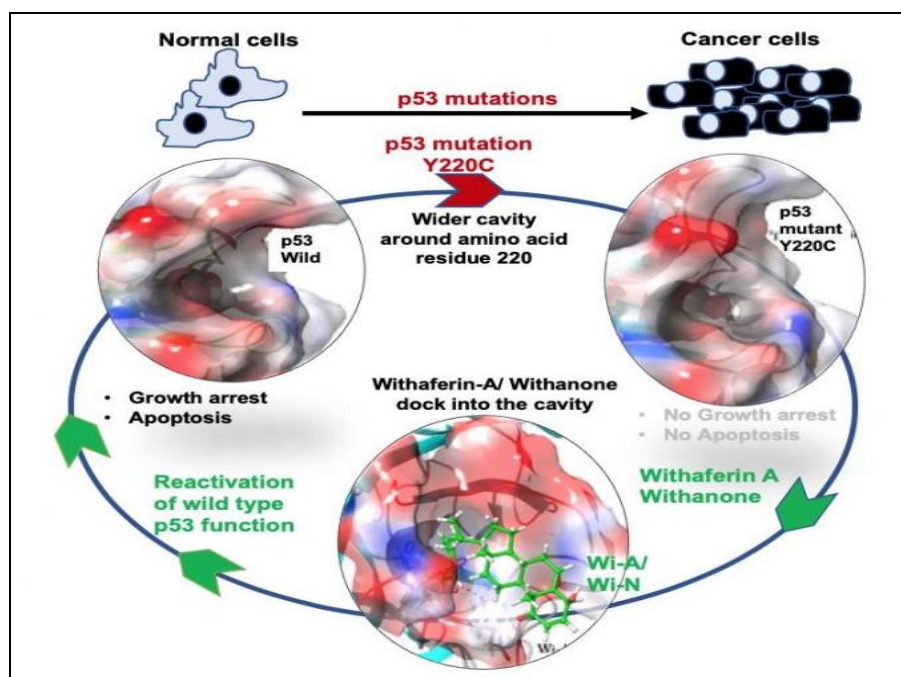
Ashwagandha is used as Ginseng in chronic stress models [26]. It has protecting impact in neural degeneration which is caused by stress [8, 10]. It helps to reach in better state to fight against stress [36]. Inhibits ulcers which are induced by stress [9, 22].

#### Ashwagandha rejuvenative and Reproductive action

Ashwagandha will improve sexual function and sexual urge [25, 33]. This herb helps to keep female's reproductive system healthy and It will increase folliculogenesis and ovarian weight [27, 42]. This herb is considered as the most significant rejuvenative herb in Indian ayurveda [2, 22]. It is very beneficial to treat high blood pressure, arthritis and diabetes [7, 22, 26]. Ashwagandha can be a potent prohibitor of angiogenesis and it is well known for its phytochemical activity [14, 18].

#### Ashwagandha in Cancer Patient

It can be used as anti-carcinogenic agent [5, 11]. It slows down the growth of human tumour cell lines [14, 35]. It neutralizes mutagenic effect [20, 37]. Ashwagandha contains of some anti-proliferative agent [20]. It is used as a natural supply of potent radiosensitizer in therapy [13]. This herb is recommended in ascitic cancer [5, 20]. It is beneficial for melanoma caused metastasis [14]. It is utilized as a support in DMBA caused Squamous cell carcinoma [11]. It raises cellular response to mitogens [5, 11]. It reverses Paclitaxel caused leukopenia [17].



<https://indiaeducationdiary.in/ashwagandha-capacity-treat-cancer-furnishes-wild-type-p53-tumor-suppressor-activity-cancers-p53y220c-mutation/>

**Fig 9:** Effectiveness of Ashwagandha in cancer

### Effects of Ashwagandha in Alzheimer's disease and Parkinson's disease

Ashwagandha is a traditional ayurvedic herb which shows neuroprotective effect due to presence of L-DOPA [10]. It raises memory through cholinergic channels [43]. It can fix mood as well as it enhances learning capacity [24, 43].

### Ashwagandha as a free radical scavenger and Antioxidant

It can increase the three natural antioxidants in brain [12]. It can create stimulation in our immune system through the production of Nitric oxide in macrophage [41]. It acts as a free radical scavenging substance and it also has a protecting impact on DNA cleavage [12, 28]. It is very effective in iron overload and toxicity of lead [2, 28]. Slow down Neuroleptic caused extra pyramidal side effects [10, 24, 25].

### Ashwagandha on anxiety and depression:

Ashwagandha can work like Bacopa Monnieri in depression & anxiety [22, 36]. This herb's anxiolytic effects are similar to Lorazepam [33]. It shows antidepressant effect like Imipramine [32]. This herb is found to be nontoxic in doses up to a hundred mg per kilogram of weight [1]. It has anticonvulsant and antispasmodic effect [26, 32]. It can able to create stimulation in endocrine glands [25, 26, 32].

### Ashwagandha as a vessel preserver:

It can able to defend vascular system against reperfusion and ischaemic injury [1, 2, 44]. It is very effective in Focal ischaemia [12, 44]. It can work as supportive agent for anti-atherogenic activity in polyherbal formula [2, 44]. It contains of a mild hypoglycemic, diuretic and an anti-hypercholesterolemic agent [1, 6, 44]. This herb is very Supportive in Streptozotocin caused diabetes [28, 44]. Ashwagandha supports retinopathy [2, 12, 44].

### Ashwagandha as Medicinal Herb

Ashwagandha is known as one of the most refreshing and regenerating agents in ayurveda. Its seeds, roots and leaves are utilized in ayurvedic and Unani medicines. Drugs which are gotten from Ashwagandha root play a vital role in treatment of inflammation of joints, nervous disorders, rheumatic pain and brain disorder. Dried roots are utilized as tonic for feminine disorders, as a sedative, in care of gaga frailty, ulcers, hiccup, cold, cough, etc. Leaves are beneficial for inflammation, swellings and carbuncles. Leaf juice shows very effective result in inflammation. Liquid extraction from bark of Ashwagandha is used in treatment of asthma and applied to bed sores locally. Ashwagandha and its extracts are utilized in preparation of herbal immunity boosting tea powders, syrups and tablets. Ashwagandha can act as a mind-boosting, immune-enhancing, anti-tumour, anti-stress and rejuvenating agent. Ashwagandha root has additionally been noted to have sex-enhancing properties. Ashwagandha is mentioned within the ancient ayurveda as an herb to be used for intensifying sexual experiences. Ashwagandha has the properties to restore sexual health and improve overall vigor whereas promoting a stress-free and balanced state of mind. A laboratory study in the year of 2002 indicates that Ashwagandha can stimulates the expansion of axons and dendrites. A study in rodents in the year of 2001 proved that Ashwagandha had memory enhancing ability. A study with rodents in 2000 concluded that Ashwagandha is very effective as antianxiety and anti-depression herbal medicine. This herb has been utilized as a liver tonic aphrodisiac, medicine agent and recently to treat dementia, ulcers, insomnia, and asthma.

Clinical trials and research on animals proved the good impact of ashwagandha for inflammation, anxiety, psychological feature and Parkinson's disease. Keeping ashwagandha in our daily diet may cut down the risk of tumours in human. It helps in providing progressive, long - lasting results for varied health issues like aging, anaemia and slow growth, arthritis, fatigue, waning memory, sports fitness and stress disorders. Pharmacological research and studies have proved that Ashwagandha has antistress, anti-cancer, antioxidant boosting, rejuvenating and haematopoietic properties. Additionally, it works as a very effective nerve tonic and helps to heal and improve nerve functional quality to keep calm throughout stressful conditions. It can also improve crucial connection of body and mind. So, Ashwagandha as a medicinal ayurvedic herb can boost our immunological and mental health both at the same time [1, 2, 4, 7, 8, 20, 22, 24, 26, 27, 44].

### Conclusion

*Withania somnifera* commonly referred to as Ashwagandha has been utilized for hundreds of years for the treatment of lethal health disorders. Various health advantages of this herbal supplement make it as a perfect booster of physical and psychological health. As per some research analysts, this medicinal herb is mainly found within the regions of India and North America. Powerful antioxidants which present in this her cut down free radicals and Slow down the aging impact on person. At last but not the least, it is concluded that accurate concentration of Ashwagandha extract improves an individual's resistance towards mental and physical health disorders thereby improves our quality of life.

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