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Medicinal Activities of *Withania somnifera* (Ashwagandha): A review

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Abstract---Ashwagandha (*Withania somnifera*) is the Ayurvedic System of medicine. And have various Pharmacological Properties like asthma, diabetes, antitumor, cancer and anti-inflammatory. There are various disadvantages and application in as detail. Ashwagandha plays on a vital role to increase their healthy life to works a frequent way, and there is two parts which show their medicinal properties such as Root to Fruit. The medicinal benefits of ashwagandha are very essential for the human body. Ashwagandha is the rasayana of traditional system of medicine, it is a dominant regenerative tonic which consists different types of pharmacological properties.^[1]

Keywords---Ashwagandha, *Withania somnifera*, Medicinal plants, Withanolides.

Introduction

Ashwagandha (*Withania somnifera*) is also called as Indian ginseng like as Indian winter cherry. Winter cherry is a necessary antique plant, its root has been applied in Indian traditional and older system of medicine. Ashwagandha is the best ayurvedic traditional medicine that works to maintain the proper nutrition to the tissue especially in bone and muscles, it's an ordinary health tonic which cure various type of health issues that is sedative diuretics, insomnia. Rajasthan, Punjab, Haryana, Gujarat, M.P. are the highest ashwagandha producing state in our country, ashwagandha is the important herb in the ayurvedic system of medicine for over the 4000 years. Its roots, fruit and leaves consist an important medicinal value.

Ashwagandha are mostly used in the ayurvedic medicines in India. They show various Pharmacological studies for the multipurpose use of the medicinal agent.[2]



Fig.1: Ashwagandha Plant

The traditional system of medicine that use in the plants are very old, they indicate that curative use of the plant about 4000-5000BC. According to world health organization, the traditional system of medicine about to treat 80% patients in India and 90% in Bangladesh.[3]



Fig.2: Dried root of ashwagandha

Taxonomical Classification of Ashwagandha:

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Solanales
Family	Solanaceae
Genus	Withania
Species	<i>W. somnifera</i>

Scientific name: *Withania somnifera* (L.) Dunal

English name: Winter Cherry

Local name: Ashwagandha.[4]

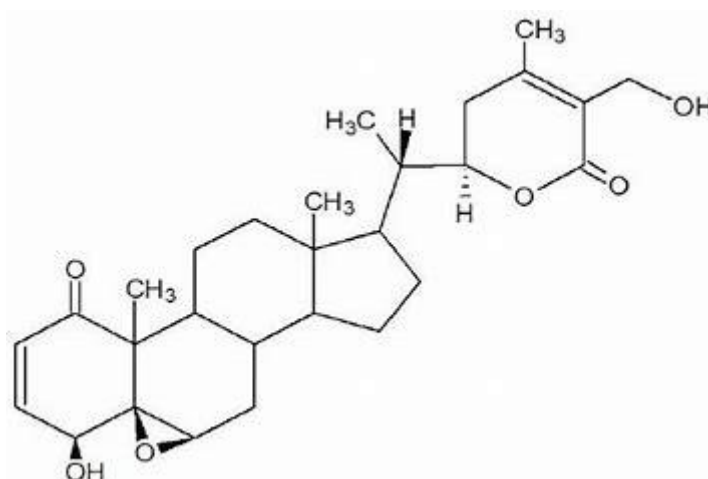
Geographical distribution of Ashwagandha (*Withania somnifera*):

Fig 3. Chemical Structure of Withferine A.

Chemistry

There are five chemical constituents are identified, isolate and extract. Ashwagandha is also helpful for the cardiopulmonary and the central nervous system. They are various secret words are used for ashwagandha and common midpoints.

Antibacterial Activity

Assurance of antibacterial activity:

The antibacterial activity was evaluated the measure the zone of inhibit of specific drug. Assurance of cellular toxic of human erythrocytes: -

The cellular toxic of the plant extract was evaluated using the procedure with small moderation (He et al.1994). The erythrocytes are fully lysed in the treatment

with 1% Triton-x 100 and transmission of the released hemoglobin as 100% lysis was taken.

Antibacterial activity of flavonoids of ashwagandha (*Withania somnifera*). The medicinal plant is used as a source to combat from diseases, and it can be identified past over 1000 years to written documents during civilization in India, China. It is an art of antique as mankind. *Withania somnifera* L (dunal) are categorized in the family of Solanaceae, it is commonly known for its rejuvenate properties. It is used for the cure of rheumatism, inflammatory conditions and tuberculosis. Several studies also identified radiosensitising cause on *W. somnifera*. Plantae contains tropane alkaloids derivatives which consists anferine, hygrine, tropine and various category of steroidal lactones which is called anolides.

Methods

Removal of flavonoids:

First, we accumulate parts of plant which were separately dried, shade finely generated using a blender and we extract it by using the following method i.e., Nagarjan and Subramaniam. So, we take 100gm of each finely generated sample in Soxhlet and remove it with 80% hot methanol (500ml) in the water bath, for minimum 24hrs and then we filter it.

Segregation of endophytic fungi:

Fine leaves of ashwagandha (*Withania somnifera*) were gathered from Dev Bhoomi University from branch of botany. These leaves were softly washed few times with water to remove sticky dirt and then be cut into pieces.

Biological compound of silver nano particles:

The parasite fungus which lives within the plant i.e., endophytic fungus, under the endophytic fungus fusarium species were identified for the screen of biological compound if AgNps. The fungus which was obtained was grown in 250ml Erlynmeyer flask, which contain 100ml of MGY. At 28°C in rest position for 7 days of maturation, this fungus contain root like structure that is mycelia were separated by purifying from filter paper and then continuously cleaned with purified water to remove the media particles from the biomass were obtained by homogenization.

Anti-Inflammatory Activity

Ashwagandha are also called as *Withania somnifera*. Indian ginseng and winter cherry is a major herb in the indigenous medical system about 3000yrs. The anti-inflammatory agents are very helpful for various long standing diseases i.e., osteoarthritis. *Withania somnifera* is the essentially compounds of withanolides, which are exceptional medicinal properties. Ethanolic root decoction are apply for differentiate its anti-inflammatory property in the company of hydrocortisone.

Anti-Fungal Activity

Withania somnifera (Ashwagandha) are belonging to family Solanaceae. The plant is applied for the treatment of inflammatory conditions, tuberculosis and a capability of anti-tumor agent (Suffness and Douros 1982, chopra et al, 1958). Various pharmacological activity has been applied to evaluate the properties of ashwagandha to authenticate the versatile use of medicinal agent. The medicine has the following hygirine, tropine and different steroidal lactones which make Withanolides, to decrease leucopenia which is induced by radiation, methanolic extract is used.

Anti-Microbial And Antioxidant Activity

From the Atlantic Ocean to south east Asia and the Mediterranean to south Africa, the *Withania somnifera* plant's medical property spread. A lot of bacterial species have been used as pilot study microbes for the assessment of the antimicrobial activity. Plant based antimicrobial drugs have enormous remedial potential. Constituents taken out from different parts of the herbal plants can be used to prevent diarrhea, cough, cold, fever, bronchitis etc. Antioxidants cures sickness like Parkinson's and Alzheimer diseases. Antioxidant are mostly found in the ashwagandha plant i.e., stem, root, leaves etc.

Vernacular Names

ENGLISH	<i>Winter cherry</i>
HINDI	<i>Asgandh, Punir</i>
ARABIC	<i>Kwknaj-e-hindi</i>
SANSKRIT	<i>Ashvagandha, Ashvakandika, Gandhapatri, Palashaparni</i>
URDU	<i>Asgand, Asgand Nagari</i>
BENGALI	<i>Ashvaganda, Asvagandha</i>
TELUGU	<i>Asvagandhi, Penneru, Pennerugadda, Dommadolu</i>
PERSIAN	<i>Kaknaj-e-hindi, asgand nagaori</i>
MARATHI	<i>Askandha, Kanchuki, Tilli</i>
GUJARATI	<i>Asan, Asana, Asoda, Asindha, Ghodaasoda</i>
MALAYALAM	<i>Amukkiram, Pevetti</i>
TAMIL	<i>Amukkira, Asubam, Asuwagandhi</i>
ODIYA	<i>Asugandha</i>

Anti-Tumor Activity Of Ashwagandha

Withania somnifera (Ashwagandha) are mainly found in the dry parts of the Indian-sub continents that are broadly used in Indian natural medicine. Extract from various parts of Ashwagandha has been claimed to promote mental and physical health due to its effect, anti-stress, anti-oxidant, anti-inflammatory, anti-pyretic, analgesic, anti-arthritis, anti-depressant, cardio protective and regenerating properties. Ashwagandha roots are commonly used for Indian Ayurvedic Medicine. We previously reported that the leaf extract obtained by a series of extraction.

Materials and Methods

Preparation of leaf extract from Ashwagandha from field - raised plants..(Withania somnifera) Ashwagandha leaf extract were developed as described earlier (20-22). The leaves are dried, ground to fine powder and subject to extract with methanol(60 C) in Soxhlet apparatus for 4 to 5 days. Nude mice assay: BALB/C nude mice (4 weeks old, female) were bought from Nihon Clea(Japan). Mice were fed on standard food pellet and water ad libitum, acclimatized to our laboratory condition at a temperature of 24±2 C, relative humidity of 55% to 65% and 12-h light/dark cycle for 3 days.

Anti-depressant activity of ashwagandha

Anti-depressants play a vital role in today lifestyle. Depression is a diverse disorder that can affect a human physical health, behavior and mood. It can cause not only lifestyle as perceived by the general public but also some of the allopathic drugs. Anti-hypertension drugs such as reserpine that neuronal storage granules of serotonin, dopamine and nor-epinephrine cause the depression more than 50% of the patients.

Patient with vital depression have symptoms that consider changes in brain neural transmitter, mono-amine, no-epinephrine, serotonin and dopamine. Withania somnifera extend as a short serve (35-75 cm) with the central stem for which branch expands radially in star like pattern (satellite).

Materials and Methods

Preparation of test drug: Ashwagandha(Withania somnifera) roots are basically obtained from Government Ayurveda Medical College, Mysore and authenticated. A combination of ashwagandha tooth paste, ghee and water in the ratio of 1:4:16 was prepared and boiled till the components of water evaporated.

Chemicals: Reserpine, Imiparine, Normal saline and other chemicals were of analytical grade.

Instruments: Glass Cylinder(25 x 12 x 25 cm²), Metal lever and Stop watch.

Animals: Swiss albino mice weighing around 25 g – 30 g of either sex were acquire from central animal facility of JSS Medical College, Mysore. Animals are maintained under standard laboratory conditions at ambient temperature of 25±1°C. The study protocols was approved by Institutional Animal Ethics

Committee(IAEC) of the college and the experiments were carried out as per CPCSEA guidelines.

Forced-swim Test:

Forced-swim test was proposed as the model of test anti-depressant activity by porsolt al. This method was described by Dhingra and Sharma.

Tail-suspension Test:

The total duration for immobility in following tail suspension are measured according to the method described by evaluating potential of anti-depressants.

Reserpine Test:

Five group of the animals were respinised by administration of the respirine(2.5 mg/kg) one hour after the respective drug administration. Acute and chronic effect of Ashwagandha and imipramine on respine induced sedation.

Conclusion

Withania somnifera (Ashwagandha) is most broadly used as a drug in the ayurvedic. It is used to treated various types of diseases such as Asthma, diabetes, stress, cancer, arthritic diseases, immunomodulator, nervous system, cardio pulmonary and inflammation. It is also used in the ayurvedic prepration of medicine which is very helpful for our health. Ashwagandha is the traditional system of the medicine which are used in multipurposes.

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