

Review: Therapeutic Use of *Withania somnifera* (L). Dunal for Human Felicity

Dr. Priyanka Gupta

Department of Agriculture, Akal Degree College, Mastuana Sahib, Sangrur-148001, India
Affiliated to Punjabi University

Abstract: *Withania somnifera* L. (Ashwagandha) pertain to the Solanaceae family. *Withania somnifera* is generally used in Unani and Ayurvedic system. It is also called winter cherry, Ajagandha, Kanaje, Amukkara and Indian Ginseng. This type of medicinal plant is used in many purposes of diseases in human being. This type of medicinal plant is generally used in anxiety, chronic disease such as stress, Intergrative oncology, Alzheimer's disease, Parkinson disease. It is also used in many purposes such as antibacterial purposes, aphrodisiac, hepatoprotective, immune modulator, anticonvulsant, antistress, antioxidant and anticancer purposes and has adaptogenic activity. In this review, we study about the phytochemical and pharmacological studies these bioactive phytochemicals used in therapeutic use in Human health.

Keywords: *Withania somnifera*, immune modulator, aphrodisiac, hepatoprotective

I. INTRODUCTION

Withania somnifera L. is an evergreen, greyish shrub. It is mostly found in Middle East area of India and some parts of Africa. It is also widely cultivated in Srilanka, Afghanistan. (Chopra et al., 1980; Dey et al., 1973, Dymock et al., 1976; Kritkar et al., 1980, Anonymous, 2007). There are twenty nine metabolites derived from this shrub (Mirjalil, MH; Moyano E.,2009; Rai, M; Jogee PS,2016). This type of medicinal plant used in various diseases such as it act as antiinflammatory purposes, antiepileptic, antidiabetic, antioxidant, antidepressant, anticoagulant, antipyretic, it also act as analgesic and has many growth promoting factors also (Subbaraju GV et al., 2016).

This type of shrub is woody and small in size about 30-150 cm in height. Its leaves are oval, simple and up to 10 cm long. Its flowers are small and greenish in colour. Its fruits are 6mm in diameter and orange red in colour.

II. MEDICINAL PROPERTIES

There are many medicinal properties of different parts of plant. Such as:-

- The berries and seeds are diuretic and help in treatment of chest problems and seeds are used to coagulate the milk in cheese making process.
- The leaves are generally used in tea purposes but it is help in antihelmintic and also help in fever control.

The leaves are used to cure the swelling of hands and feet and used as anti inflammatory purposes.

- The Roots are basically used to improved the immune system in human body because they increase the white blood cells these are called WBC. The roots are used in control the sugar level, cholesterol level and used to cure the cancer purposes such as prostate cancer, Breast cancer, Pancreatic cancer, colorectal cancer, Lung cancer, Ovarian cancer, cervical cancer and tumour purposes. It is also used in dyspepsia, loss of appetite, cough and dropsy problems (Srinivasan S. et al, 2007; Malik F. et al, 2007; Stan SD. et al, 2008; Mandal C. et al, 2008; Li X et al., 2016; Chang E et al., 2016; Xia S et al., 2018).

III. PHYTOCHEMICAL STUDIES

There are 35 chemical constituents in *Withania somnifera* L. There are active components are Isopellertierine, anferiene these are two alkaloids. Withanolides, withaferins are steroidal lactones. Withanoloides, sitoindoside VII, VIII, IX, X are the saponins. They improve the immune response and show the anticancer activity in human (Grandhi A., 1994). There is many other ingredients lie in *Withania somnifera*. These ingredients are somniferine, somnine, somniferinine, withanine, pseudo-withanine, tropine, pseudo tropine, choline, cuscohygrine, Iron, Pseudotropine, Scopoletin, Somniferinine, Somniferiene, Trapanol, Withania, Withananine and Withanolides (Bone K., 1996; Elsakka M et al., 1990).

IV. PHARMACOLOGICAL STUDIES

In Unani and Ayurvedic system *Withania somnifera* has many pharmacological activities such as sedative, aphrodisiac, hepatoprotective, antioxidant, antiageing, antitumour, adaptogenic and Antiinflammatory activity.

- *Antioxidant activity:-*

Withania somnifera is a powerful antioxidant. It helps to increase the natural antioxidants such as catalase, glutathione peroxidase and superoxide dismutase activity. These antioxidants are help in antistress, antiinflammatory and antiaging effects.

- *Antiaging activity:-*

Withania somniferous helps in improvement of haemoglobin level and red blood cells count, hair melanin, decreased the level of serum cholesterol and improve the seated stature. These all activities improved the antiaging activity by Ashwagandha (Dhuley. 1997).

- *Antiinflammatory activity:-*

Withaferin A is a major component that is effective as hydrocortisone sodium succinate to suppress the arthritic syndrome and to possess the antiinflammatory effects like carrageenan induced inflammation and cotton pellet granuloma (Sharma et al., 1991).

- *Antitumour activity:-*

Withaferin A, withanolide D and E has anti tumour activity in human epidermoid carcinoma of nasopharynx and Ehrlich ascites carcinoma, Sarcoma180. It also acts as mitotic poison on the division of cultured human larynx carcinoma cells at metaphase and in HeLa cultured cells. Methylthioacetate colchicine effects the Withaferin A (Anonymous et al 1982; Rastogi et al., 1998, Khare et al., 2007).

- *Antistress activity:-*

Withania somniferous exhibited the antistress activity due to its adaptogenic activity. There are many biological, physical and chemical stressors to protect the other stresses (Bhattacharya, 1997; Rege et al., 1999). *Withania somniferous* affect the immune suppression, cognitive deficit, gastric ulceration, homeostasis to decreases the chronic stress (Bone., 1996).

- *Anxiety and Depression:-*

Withania somniferous extracts help in anxiolytic activity and antidepressant activity due to benzodiazepine lorazepam, they have imipramine in the swim induced behaviour despair and learned helplessness (Bhattacharya et al. 2000; Bhattacharya et al 2001; Singh et al., 2001).

- *Anticonvulsant activity:-*

Withania somniferous help in reduction in severity of mot and seizuers induced by electrical stimulation through bipolar electrodes.

- *Specific benefits related to Neurogenerative Disorders:-*

There is therapeutic use of *Withania somniferous* help in neurodegenerative disorders such as dementia, multiple sclerosis and Parkinson's, Alzheimers and Huntington's diseases. There are steroidal lactones have the neurons and brain regenerative properties. They improve the motor skills, anatomical and behavioural impairments (Prakash J et al., 2013; Singh N et al., 2007).

- *Anticancer Activities:-*

Withania somniferous help in cure of Prostate cancer with the help of Par-4 Dependent Apoptosis. It also helps in

Breast cancer with the help of FOXO3 and Bim-dependent apoptosis. It helps in cure of pancreatic cancer by induction of proteasome inhibition and promotion of accumulation of ubiquitinated proteins and ER stress mediated apoptosis. It helps in cure of Colorectal cancer cells by ROS- dependent mitochondrial dysfunction-mediated apoptosis (Srinivasan S; et al., 2007; Stan S.D et al., 2008; Li X et al., 2016; Xia S et al., 2018).

V. CONCLUSION

Withania somniferous is mostly used in many pharmacological studies. It acts as antioxidant activity, antitumour activity, anticancerous activity, anxiolytic activity has been studied, *Withania somniferous* is generally used to cure the various severe diseases in human to give strong immune system.

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