Asparagus Racemosus Important Medicinal Plant

Kok Singh Parihar

School of Studies in Microbiology, Jiwaji University, Gwalior, India

Abstract: Shatavari (*Asparagus recemosus*) is used in the treatment of various diseases in the Ayurvedic and indigenous medical systems. It contains various component like steroidal saponins (Shatavarins I-IV), isoflavones, asparagamine, racemosol, polysaccharides, mucilage,vitamins (A, B₁, B₂, C, E, Mg, P, Ca, Fe) and folic acid, essential oils, asparagine, arginine, tyrosine, flavonoids resin and tannin. It is used in the treatment of general debility, male infertility (due to low sperm count), loss of libido, epilepsy (fits), mental debility, menopausal syndrome, anemia, breast milk secretion and for both mental and physical ailments, nutritive, aphrodisiac, astringent, prevents ageing, increases longevity, imparts immunity, improves mental function, vigor and adds vitality to the body, nervous disorders, dyspepsia, tumors, inflammation, neuropathy and hepatopathy antioxidant, anti-abortifacient, antioxytoxic, spasmodic to uterus, hypoglycemic, hypertensive, anticoagulant, antiviral, anticancer and antidysenteric activities.

Key Words : *Asparagus recemosus*, Medicinal plant , Chemical constituent, Nutritional, Medicinal property.

Introduction

The medicinal plants are collected from their natural habitat. The uncontrolled harvesting and increased demand lead to the extinction of many important plants and affected the potency and quality of medicinal products derived from them (Sharma *et al.*, 2011). The medicinal plants contain several phytochemicals such as vitamins, carotenoids, terpenoids, flavonoids, polyphenols, alkaloids, tannins, saponins, enzymes and minerals etc. (Sharma *et al.*, 2011). These phytochemicals possess antioxidant activities, which can be used in the treatment of multiple ailments. The World Health Organization (2003) has estimated that 80% of the population of developing countries is unable to afford pharmaceutical drugs and hence rely on traditional medicines, mainly plants based, to sustain their primary health care needs. India is one of the most medico-culturally diverse countries in the world where the medicinal plant sector is respected even today. The main traditional systems of medicine in India include Ayurveda, Unani and Siddha (Bopana and Saxena, 2007).

Asparagus recemosus (Satavari) genus Asparagus has been recently moved from the sub family Asparagae in the family Liliaceae to a newly created family Asparagaceae. Asparagus is a Greek word that stands for "stalk" or "shoot" About 300 species of Asparagus are known to occur in the world (Goyal *et al.*, 2003) and 22 species are recorded in India, in both; hemispheres and throughout temperate and tropical regions. Although several species of Asparagus are grown in India but A. racemosus, A. gonaclades and A. adsendens are most commonly used in indigenous medicine (Battu and Kumar, 2010, Durai Prabakaran *et al.*, 2015).

Plant Morphology

The plant of *A. racemosus* is a climbing armed under shrub with woody stems and re curved and rarely straight spines. Young stems are very delicate, brittle and smooth; leaves reduced to minute chaffy scales and spines; cladodes triquetrous, curved in tufts of 2-6. Fruits are sub globose pulpy berries, purplish black when ripe, seeds are 3-6, globose or angled having brittle and hard testa. The tuberous succulent roots are 30 cms to a meter or more in length, fascicled at the stem base, smooth tapering at both ends (Moharana, 2008). Climber growing to 1-2m in length is found all over India (Jarald and Jarald, 2007).

Habitat

It is a perennial branched climbing herb found all over India, especially in tropical and sub-tropical parts and in Himalayan region up to 1400 meter elevation (Moharana, 2008).

Kingdom	: Plantae	Family : Asparagaceae
Division	: Angiosperms	Genus : Asparagus
Class	: Monocot	Species : racemosus
Order	: Asparagales	

Classification Table 1: Classification of A. racemosus according to (Sachan et al., 2012)

Cultivation

The plant prefers light (sandy), medium (loamy) and heavy (clay) well-drained soils. However, black, well-drained and fertile soil is good for its cultivation. Crop responses well to tropical and hot climate and the temperature required ranges from 25-40°C. The tamarind is adapted to semiarid regions of the tropics and can withstand drought conditions quite well.





Chemical constituents

A fleshy root contains saponin, water soluble constituents 52.1/2%, moisture 1%, glucose 7% and ash from dried root 4%. Root contains 3.6% glycyrrhizin, a yellow amorphous powder-asparagine, a glycoside isoliquirtin 2.2%, glucose 3.8%, starch, gum, mucilage, amorphous, sulphuric acid and metallic acids, calcium and magnesium salts (Moharana, 2008), vitamins (A, B₁,B₂, C,E, Mg, P, Ca, Fe) and folic acid present in the root (Chawla *et al.*, 2011) and steroidal saponins (shatavarins I–IV). Glycosides of sarsasapogenin in shatavarin IV contain two molecules of rhamnose and one molecule of glucose. Other active compounds such as quercetin, rutin (2.5% dry basis) and hyperoside are found in the flowers and fruits whereas leaves contain diosgenin and quercetin-3 glucuronide (Anonymous, 1987, Thomsen, 2002, Bopana and Saxena, 2007) (Fig.2). *A. racemosus* roots are reported to have sarsapogenin, saponins A4-A7. Glycosides of quercetin, rutin, hyperoside and diosgenin, quercetin 3-glucuronide, sitosterol and stigmasterol were present along with their glucosides (Sachan *et al.*, 2012).





Polysaccharides

Fig. 2 : Structures of some reported phytoconstituents of Asparagus racemosus

Medicinal Importance

A. *racemosus* is used by ayurvedic practitioners for prevention and treatment of dyspepsia, gastric ulcers. It is used for inflammation, nervous disorders, certain infectious and liver diseases, kidney disorders, epilepsy, chronic fevers, stomach ulcers, liver cancer and excessive heat. It is known to increase milk secretion in nursing mothers and regulates sexual behaviors (Sharma and Sharma, 2013).

It is traditionally used in the treatment of dysentery, epilepsy, leprosy, night blindness, tuberculosis, snake bite, anti-spasmodic, gonorrhea, piles, diabetes, rheumatism, cough, diarrhoea, gastric troubles and headache. The aerial parts of the plant are used as spasmolytic, anticancer, anti-arrhythmic, antibacterial and anti-fungal (Durai Prabakaran, *et al.*, 2015).

It is used as medicine in Ayurveda, Unani and Siddha. In Ayurveda, it is considered as a female tonic and widely used in diseases including dysentery, in diabetic retinopathy, inflammations, tumor, bronchitis, nervous disorder, hyper acidity, certain infectious diseases, neuropathy, conjunctivitis, spasm, chronic fevers, and rheumatism. It is also beneficial in female infertility to increase libido and cures inflammation of sexual organs, enhances folliculogenesis and ovulation, prepares the womb for conception, prevents miscarriages, acts as post partum tonic by increasing lactation and normalizing the uterus and the changing hormones. It is also used also in leucorrhoea and menorrhagia. It has also been identified as one of the drugs to control the symptoms of AIDS. It also promotes maternal health, and used as a galactagogue. Shatavari is the main Ayurvedic rejuvenative tonic for the females (Hasan *et al.*, 2016).

CONCLUSION

A. racemosus medicinal plant growing natural and forest in India. It can be used in the treatment of general debility, male infertility, lost of libido, epilepsy, mental debility and anemia, increase milk secretion in nursing mothers, dysentery, leprosy, night blindness, tuberculosis, snake bite, anti-spasmodic, gonorrhea, piles, diabetes, rheumatism, cough, diarrhoea, gastric troubles and headache antimicrobial (antibacterial, antiviral, anti-fungal) activity.

REFERANCES

- [1]Sharma, V., Sharma, S., Pracheta, and Paliwal, R. (2011). *Withania somnifera:* A rejuvenating ayurvedic medicinal herb for the treatment of various human ailments. *International Journal of Pharm Tech Research*. 3(1): 187-192.
- [2] Bopana, N. and Saxena, S. 2007. *Asparagus racemosus* ethnopharmacological evaluation and conservation needs. Journal of Ethnopharmacology, 110(1): 1-15.

- [3] Goyal, R.K., Singh, J. and Lal, H. (2003). Asparagus racemosus-an update. Indian Journal of Medical Sciences. 57(9): 408-414.
- [4] Battu, G.R. and Kumar, B.M. 2010. Anti-inflammatory activity of leaf extract of *Asparagus racemosus* willd. International Journal of Chemical Sciences, 8(2): 1329-1338.
- [5] Durai Prabakaran, K., Vadivu, R. and Jayshree, N. 2015. Pharmacognostical standardization of leaves of Asparagus racemosus wild. International Journal of Multidisciplinary Research and Development, 2(1): 332-335.
- [6] Moharana, D. 2008. Shatavari, Jastimadhu and Aswagandha, the ayurvedic therapy. Orrisa Review, 72-77.
- [7] Jarald, E.E. and Jarald, E.S. 2007. Textbook of pharmacognosy and phytochemistry. 1st Ed., (New Delhi), 33-34.
- [8] Sachan, A.K., Das, D.R., Dohare, S.L. and Shuaib, M. 2012. Asparagus racemosus (Shatavari): an overview. International Journal of Pharmaceutical and Chemical Sciences, 1(3): 588-592.
- [9] Chawla, A., Chawla, P., Mangalesh and Roy, R.C. (2011). Asparagus racemosus (Wild): biological activities and its active principles. Indo-Global Journal of Pharmaceutical Sciences. 1(2): 113-120.
- [10] Anonymous, (1987). The wealth of India, raw materials. *Publication and Information Directorate*, CSIR, New Delhi. pp. 468-472.
- $\verb[11] Thomsen, M. 2002. Shatavari-Asparagus racemosus.$

http://www.phytomedicine.com.au/files/articles/shatavari.pdf.

- [12] Sharma, A. and Sharma, V. 2013. A brief review of medicinal properties of *Asparagus racemosus* (Shatawari). International Journal of Pure and Applied Bioscience, 1(2): 48-52.
- [13] Hasan, N., Ahmad, N., Zohrameena, S., Khalid, M. and Akhtar, J. 2016. Asparagus racemosus: for medicinal uses and pharmacological actions. International Journal of Advanced Research, 4 (3): 259-267.