WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 16, 215-220. Review Article ISSN 2277–7105

SHATAVARI (ASPARAGUS RACEMOSUS): A COMPREHENSIVE REVIEW OF ITS THERAPEUTIC POTENTIAL AND PHARMACOLOGICAL PROPERTIES

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Article Received on
23 June 2025,

Revised on 13 July 2025,
Accepted on 03 August 2025,

DOI: 10.20959/wjpr202516-37910

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ABSTRACT

Asparagus racemosus, commonly known as *Shatavari*, is a medicinal plant belonging to the family Asparagaceae. Widely distributed across low altitudes in India, it has been a cornerstone of *Ayurvedic* medicine for centuries. Traditionally, the dried roots of *A. racemosus* have been used as a tonic, diuretic, galactagogue, and adaptogen, aiding in the body's resistance to physical and mental stress. It is also used in the treatment of nervous disorders, inflammation, reproductive health issues, and certain infectious diseases. Despite its extensive traditional use, there is limited scientific evidence validating many of these therapeutic claims. Recent pharmacological studies have begun to highlight the potential health benefits of *A. racemosus* extracts—both alcoholic and aqueous—including immunomodulatory, antioxidant, antispasmodic, adaptogenic, antiulcer, galactagogue, and hepatoprotective effects. Bioactive constituents such as steroidal saponins (Shatavarins I–IV), flavonoids, polyphenols, alkaloids (e.g., racemosol), and sapogenins contribute to its pharmacological activities. These compounds are being studied for a wide range of effects, including anticancer, antiviral, hypoglycemic, anticoagulant, and antidysenteric properties. This review aims to provide a comprehensive overview of the phytochemistry, traditional uses, and emerging pharmacological evidence related to

Asparagus racemosus, while identifying areas where further scientific validation is necessary through controlled clinical trials.

KEYWORDS: *Shatavari, Asparagus racemosus, Ayurveda.*

INTRODUCTION

Asparagus racemosus, commonly known as *Shatavari*, *Satavar*, or *Shatamuli*[1], is a well-known medicinal plant in traditional Indian medicine systems such as *Ayurveda*, *Siddha*, and *Unani*. Belonging to the family Asparagaceae, *A. racemosus* is a woody climber native to tropical and subtropical regions of Asia, particularly India, Sri Lanka, Nepal, and parts of Northern Australia and the Himalayas. It typically grows in gravelly, rocky soils at elevations ranging from 1,300 to 1,400 meters and can reach a height of 1–2 meters. The plant features needle-like phylloclades, small white flowers that bloom during July, and bears globular, blackish-purple berries by September. Its characteristic tuberous root system has long been of pharmacological interest. Botanically classified in 1799, *A. racemosus* holds significant therapeutic value in *Ayurveda*, where it is described as a "Rasayana" herb—rejuvenating and longevity-promoting. The name "Shatavari" translates to "she who possesses a hundred husbands," reflecting its traditional association with enhancing female fertility and vitality. Ancient *Ayurvedic* texts such as *Charak Samhita* and *Ashtanga Hridaya* document the herb's role in treating various conditions including reproductive disorders, gastric ulcers, dyspepsia, and as a galactagogue. Various parts of the plant, especially the roots, are used in crude, semi-purified, and purified forms[1] It contains a diverse range of bioactive phytochemicals, including steroidal saponins (Shatavarins I–IV), flavonoids, alkaloids like racemosol, polyphenols, and mucilage. These compounds are believed to impart a wide range of therapeutic activities such as antiulcer, antioxidant, anti-inflammatory, immunomodulatory, anticancer, antidiabetic, hepatoprotective, and nervous system-supporting properties. Despite its long-standing traditional use, modern scientific evidence to support many of these health claims is still emerging. Some clinical and experimental studies have shown promising results, especially in areas like lactation enhancement, immune system modulation, and gastrointestinal protection. However, comprehensive clinical data and mechanistic studies remain limited, and further research is needed to validate these traditional claims. This review aims to provide a detailed overview of *Asparagus racemosus*, including its taxonomy, habitat, morphology, traditional applications, and emerging pharmacological evidence.

Special emphasis is given to its bioactive compounds and therapeutic potential in modern medicine, with the goal of bridging traditional knowledge and scientific validation.

Scientific Classification[2]

- **Kingdom:** Plantae
- **Division:** Angiosperms
- **Class:** Monocots
- **Order:** Asparagales
- **Family:** Asparagaceae
- **Genus:** *Asparagus*
- **Species:** *Asparagus racemosus*

Traditional Significance and Historical Use[3]

Shatavari has been extensively documented in classical *Ayurvedic* texts, including the *Charaka Samhita* and *Ashtanga Hridayam*, as a Rasayana herb—an agent that promotes longevity, rejuvenation, and resistance to disease. The term "*Shatavari"* is derived from *Sanskrit*, meaning "a woman with a hundred husbands," symbolizing its importance in promoting fertility, hormonal balance, and overall vitality in women. It is widely prescribed for a range of gynecological issues including menstrual disorders, menopause-related symptoms, infertility, and as a lactation enhancer (galactagogue). Beyond its use in female health, *A. racemosus* is also traditionally employed to treat conditions such as dyspepsia, gastric ulcers, chronic fever, inflammation, liver disorders, and certain infectious diseases. In the traditional *Siddha* and *Unani* systems, its root extract has been used for its cooling, nourishing, and tonic effects. It is also considered beneficial in mental health, being used to treat anxiety, stress, and nervous system disorders.

Pharmacological Activities

- **Antiparasitic and Antibacterial effect**[4]

Alcoholic extract of roots has antibacterial effect against Staphylcoccusaureus and Escherichia coli whereas aqueous solution26 does not have any impact. Fungitoxicity against three plant fungi viz., Helminthosporiumsativum (60.7%)27 Colletotrichumfalcatum (58.2) and Fusariumoxysporum (60.7%) is shown by root juice. The methanol fraction of the leaves using the disc diffusion test at a concentration of 4000 and 5000 ppm28 inhibits Proteus

vulgaris. Antibacterial activity against Staphylococcus is shown by the fresh plant juice. The extract of the plant showed moderate toxicity against Rhizoctonia solanil29.

- **Antidepressant activity**[5]

Adaptogenic drugs are those which are useful as antistress agents by promoting non-specific resistance of the body. Although, the adaptogenic effect of A. racemosus is well documented, its use in psychological disorders like depression is not scientifically evaluated. Hence, the present investigation evaluates the antidepressant effect of MAR standardized to saponins (62.2% w/w). Rats were given methanolic extract of roots of A. racemosus in doses of 100, 200 and 400 mg/kg daily for 7 d and then subjected to forced swim test (FST) and learned helplessness test (LH). The results showed that MAR decreased immobility in FST and increased avoidance response in LH indicating antidepressant activity. In behavioral experiments, MAR increased the number of head twitches produced by 5-HTP and increased clonidine-induced aggressive behavior indicating facilitatory effect on both serotonergic and adrenergic systems respectively. However, MAR had insignificant effect on l-DOPA-induced aggressive behavior indicating absence of activity on dopaminergic system. MAR also reversed changes to the endogenous antioxidant system induced by FST. Thus, MAR has significant antidepressant activity and this effect is probably mediated through the serotonergic, noradrenergic systems and augmentation of antioxidant defenses.[74]

- **Antidiabetic Activity**[6]

Insulin production was stimulated by ethanolic extract and five distinct partition fractions of Shatavari roots in isolated perfused rat pancreases, isolated rat islet cells, clonal cells. Glucose-3-isobutyl-1-methylxanthine, tolbutamide, and a depolarizing potassium chloride concentration were found to boost this stimulatory effect, while diazoxide and verapamil decreased it. They also boosted intracellular calcium ion levels. In another investigation, Shatavari extract was found to increase glucose tolerance in diabetic and non-diabetic rats when given orally with glucose. The extract significantly reduced postprandial hyperglycemia following sucrose administration and reversibly raised the amount of unabsorbed sucrose in the stomach. Furthermore, the extract improved glucose transport and insulin action in 3T3-L1 adipocytes. In diabetic rats, daily injection of the extract resulted in lower serum glucose, higher pancreatic insulin, plasma insulin, liver glycogen, and a lower overall oxidant status. The antihyperglycemic activity of Shatavari is thought to be mediated

in part by carbohydrate digestion and absorption inhibition, as well as an increase in insulin secretion and action in peripheral tissue.

ShatavariAyurvedic Formulation

- **Shatavari Guggulu**[7]

Guggulu pacifies Vatadoshas, stimulates neuromuscular actions, muscles strengthening, nerve revitalization and treats condition like paralysis and hemiplegia. It has shatavari, giloy, ashwagandha, padmaka, pippali, saunf, ajwain, sonth, gandhaprasarni, gokshura, rasna, kachur, shuddhaguggulu, cow's ghee. Small Vatakam of all ingredients (fine powdered mixture with ghee) can be stored in a glass jar as medicine. 1-2 Vatakam with water/warm milk can be taken twice a day in empty stomach or 1 hour before a meal or 2 hours after a meal.

- **Shatavari Kalpa**[8]

ShatavariKalpa is amalgamation of shatavari and elaichi to enhance breast milk production and reduce pain and fatigue. It balance the vatta and pitta dosha. It improve immunity and stamina in menstruation, during pregnancy and post-natal. 4g shatavar, 0.05g elaichi, 5.95g sugar in each 10 gm formulation. Sieve the sun dried grinding powder of sugar and elaichi and mix with melted sugar. Cooled solution can be rolled into small granules and stored in container. It is used as anti-inflammatory, antioxidant, carminative, estrogenic, galactagogue. Dose is 1-2 tsf two times a day with warm milk.

CONCLUSION

Asparagus racemosus (Shatavari) is a well-documented and highly valued medicinal plant in traditional systems of medicine such as Ayurveda, Siddha, and Unani. Its wide range of therapeutic uses—spanning antioxidant, diuretic, antidepressant, antiepileptic, immunostimulant, hepatoprotective, antibacterial, anti-ulcerative, and neuroprotective activities—has attracted significant attention from researchers and the pharmaceutical industry alike. Extracts from different parts of the plant, especially the roots, have been extensively studied and have demonstrated potent pharmacological properties. Despite considerable research efforts and traditional usage, the precise active constituents responsible for many of these effects remain to be fully elucidated. Furthermore, the lack of standardized extraction protocols and quality control measures often leads to variability in therapeutic outcomes. Therefore, a detailed, systematic study focused on identification, cataloguing, and

documentation of the bioactive compounds is essential for ensuring consistency, efficacy, and safety of *A. racemosus*-based formulations. The integration of traditional knowledge with modern scientific approaches can pave the way for the development of evidence-based herbal medicines. Continued pharmacological investigation and clinical validation are necessary to unlock the full therapeutic potential of this ancient plant and to establish it as a reliable component of modern healthcare systems.

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