

HUNDRED PROBLEMS, ONE SOLUTION *ASPARAGUS RACEMOSUS****Jhansee Mishra¹, Alok Kumar Dash¹ and Suresh Kumar²**¹Department of Pharmacy, Suresh Gyan Vihar University, Jaipur, India. 302025.²Department of Pharmacy, V.B.S. Purvanchal University, Jaunpur, 222003.Article Received on
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302025.email2jhansi@yahoo.co.in**ABSTRACT**

Asparagus racemosus, traditionally known as shatavari means "who possesses a hundred husbands or acceptable to many". Asparagaceae is an ayurvedic plant with medical importance of tropical and subtropical India. Its medical usage has been reported in Indian & British Pharmacopeias and in traditional system of medicine such as Ayurveda, Unani & Siddha. Shatavari is the main Ayurvedic texts for prevention and treatment of gastric ulcers, dyspepsia and as a galactagogue. A. racemosus has also been used successfully by some Ayurvedic practitioners for nervous disorders, inflammation, liver diseases and certain infectious diseases. Asparagus racemosus has been shown to have many other properties like Antistress, Anti-diarrhoeal,

Antidyspepsia, Adaptogenic action, Antiulcerogenic action, Antioxidant & Cardio protection. Asparagus racemosus is mainly known for its phytoestrogenic properties with an increasing awareness about the harmful effects with synthetic oestrogens, the interest in plant derived oestrogens has increased tremendously making Asparagus racemosus particularly important. Its beneficial uses in correcting menstrual irregularities are mentioned in ancient literature, till date they are prescribed by ayurvedic physicians to correct menstrual irregularities with products available in the markets.

KEYWORDS: Asparagus, Asparagus racemosus, galactagogue, female tonic.**INTRODUCTION**

The genus Asparagus includes about 300 species around the world. The genus is considered to be medicinally important because of the presence of steroidal saponins and sapogenins in various parts of the plant. Out of the 22 species of Asparagus recorded in India; Asparagus racemosus is the one most commonly used in traditional medicine. Use of Asparagus

racemosus was mentioned in the ancient literature of Ayurveda (Charaka samhita). It is used to rectify the gynecological problems like irregularities in menstrual cycle and sexual dysfunction.

Shatavari (*Asparagus racemosus*) is a climbing plant which grows in low forest areas throughout India. The name "Shatavari" translates to "**a woman who possesses 100 husbands**", referring to the Shatavar rejuvenation effect in female reproductive organs. A much branched spinus under-shrub with tuberous, short rootstock bearing numerous fusiform, succulent roots. Shatavari has been mentioned in Ayurvedic texts like the Charak Samhita and Susruta Samhita, and Astanga Samgraha^{5,6}. In the Kashyap Samhita, has evidently stated that shatavari promotes maternal health and noted its meticulous use as a galactagogue (enhances breast milk secretion in lactating mothers). Shatavari actually literally means "having a 100 spouses" and ayurvedic texts accurately claim that shatavari strengthens a woman to the point where she is being capable of producing thousands of healthy ova. Ayurveda has called Shatavari the Queen of herbs and is the primary herb recommended for female health. Among the three Ayurveda Doshas of 'Vata', 'Pitta' and 'Kapha', Shatavari efficiently helps in balancing 'Pitta Dosha'. Shatavari's rasas are sweet "madhura" and also in nature bitter "tikta".

A study of ancient classical Ayurvedic literature claimed several therapeutic attributes for the root of *A. racemosus* and has been specially recommended in cases of threatened abortion and as a galactagogue. Root of *A. racemosus* has been referred as bitter-sweet, emollient, cooling, nervine tonic, constipating, galactagogue, and aphrodisiac, diuretic, rejuvenating, carminative, stomachic, antiseptic and as tonic. Beneficial effects of the root of *A. racemosus* are suggested in nervous disorders, dyspepsia, diarrhoea, dysentery, tumors, inflammations, hyper dipsia, neuropathy, hepatopathy, cough, bronchitis, hyperacidity.



Botanical descriptions

Botanical Name(s): Asparagus Racemosus, Asparagus Sarmentosus, Asparagus Gonocladus, Asparagus Adscendens.

FamilyName: Liliaceae

Kingdom: Plantae

Order: Asparagales

Family: Asparagaceae

Genus: Asparagus

Species: A. racemosus

Popular Name(s): Wild Asparagus, Asparagus Root, Satavari, Shatamuli

Habitat: Found in the jungles around 8,000 feet altitude throughout India, especially Northern India. The plant grows throughout the tropical and subtropical parts of India up to an altitude of 1500m. The plant is a spinous under-shrub, with tuberous, short rootstock bearing numerous succulent tuberous roots (30–100 cm long and 1–2 cm thick) that are silvery white or ash colored externally and white internally. These roots are the part that finds use in various medicinal preparations¹²³. The stem is woody, climbing, whitish grey or brown colored with small spines. The plant flowers during February–March leaving a mild fragrance in its surrounding and by the end of April, fruits can be seen with attractive red berries. Asparagus racemosus is a plant used in traditional Indian medicine (Ayurveda). The root is used to make medicine.

Active constituents

The major active constituents of Asparagus racemosus are steroidal saponins (Shatavarins I–IV) that are present in the roots. Shatavarin IV is a glycoside of sarsasapogenin having 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; while diosgenin and quercetin-3 glucuronide are present in the leaves. Trace minerals are found in roots-zinc, copper, cobalt along with calcium, magnesium, potassium zinc and selenium.

This plant also contains vitamins A, B₁, B₂, C, E, Mg, P, Ca, Fe and folic acid. Other primary chemical constituents of Asparagus are essential oils, asparagine, arginine, tyrosine, flavonoids (kaempferol, quercetin and rutin), resin and tannin.

Shatavarin IV is a glycoside of sarsasapogenin having 2 molecules of Asparagus rhamnose and 1 molecule of glucose. Sarsasapogenin and shatavarin I-IV are present in roots, leaves, and fruits of Asparagus species. A new isoflavone, 8-methoxy-5,6,4'-trihydroxyisoflavone-7-O- β -D-glucopyranoside was also reported from *A. racemosus* previously. The isolation and characterization of polycyclic alkaloid called asparagamine, a new 9,10-dihydrophenanthrene derivative named racemosol and kaempferol were also isolated from the ethanolic root extract of *A. racemosus*.

Medicinal uses

According to Ayurvedic Indian Herbal system; *Asparagus racemosus* is conceivably the best known as a female rejuvenative, used for stimulation of milk production in lactating women, useful for childlessness, decreased libido, threatened miscarriage, menopause, leucorrhoea and has the capability to balance pH in the cervical area and as a good remedy for impotence and general sexual weakness.

A. racemosus is also suggested for its soothing agent upon systemic dryness which is part of the natural aging process. It endorses positive emotions that calming fresh sensitivity and the sizzling emotions such as irritability, anger, jealousy, resentment and hatred. It also helps with pain, restless sleep, disturbing dreams and those who have weak emotional and physical heart.

Asparagus racemosus is mainly known for its phytoestrogenic properties. With an increasing realization that hormone replacement therapy with synthetic oestrogens is neither as safe nor as effective as previously envisaged, the interest in plant-derived oestrogens has increased tremendously making *Asparagus racemosus* particularly important. The plant has been shown to aid in the treatment of neurodegenerative disorders and in alcohol abstinence-induced withdrawal symptoms. *Asparagus racemosus* is prescribed for stomach ulcers, hyperacidity and diarrhea, dry and irritated membranes of the vagina and in the upper respiratory tract. It is beneficial in treating bronchitis as well as. *Asparagus* root possesses aphrodisiac, demulcent, general tonic, diuretic, anti-inflammatory, antiseptic, anti-oxidant and antispasmodic properties. Regular use of *asparagus* root treats infertility, impotence, leucorrhoea, menopause syndromes, hyperacidity, and certain infectious diseases such as herpes and syphilis.

It is also useful in treatment of epilepsy, kidney disorders, chronic fevers, excessive heat, stomach ulcers and liver cancer, increases milk secretion in nursing mothers and regulates

sexual behaviors. *Asparagus racemosus* cleanses, nourishes and strengthens the female reproductive organs and so, it is traditionally used for PMS, amenorrhea, dysmenorrhea, menopause and pelvic inflammatory disease (PID) like endometriosis. *Asparagus racemosus* is considered as the most potent female health tonic.

Asparagus racemosus also supports deeper tissue and builds blood, helping in treating infertility, prevents miscarriage and acts as a post-partum tonic as it increases lactation, regularizes the uterus and balances hormones, probably due to phyto-estrogens.

Antiabortifacient

This activity is due to Shatavarin-I. Which blocks even oxytocin induced contractions in rat, guinea pig and rabbit uteri in vivo and in situ in a dose dependent manner. The researchers also confirmed that the in vivo effect of shatvarin IV i.e. Saponin A4 on the uterine muscles is just like the estrogen. Its rasayana as well as antioxidant activity helps in modulating various immune processes and also prevents lipid peroxides at the placental level. The polycyclic alkaloid asparagamine A is also reported to have an antioxytotic action, showing an antiabortifacient affect.

Asparagus racemosus as an Antioxidant

Antioxidants are intimately involved in the prevention of cellular damage – the common pathway for cancer, aging and a variety of diseases. *Asparagus racemosus* possess antioxidant properties. Methanolic extract (100mg/kg BW p. o.) given to orally for 15 days and it increase the antioxidant defense, that is, enzymes superoxidase dimutase, catalase and ascorbic acid, increase significantly whereas a significantly decrease in lipid peroxidation. The anti oxidant properties was found due to presence of Isoflavons specially racemofuran, asparagamine A and racemosol.

Galactogogue

A. racemosus is termed as stanya i.e. galactogogues in ayurveda. It has been investigated by a number of researchers and they found that its roots and root extracts can improve lactational inadequacy in lactating mothers.

Antibacterial activity

Methanolic extract of roots at 50, 100 and 150 mg/mL showed significant In vitro antibacterial efficacy against *Escherichia coli*, *Shigella dysenteriae*, *Shigella sonnei*, *Shigella*

flexneri, Vibrio cholerae, Salmonella typhi, Salmonella typhimurium, Pseudomonas pectida, Bacillus subtilis and Staphylococcus aureus. Chloramphenicol was used for comparison.

Gastrointestinal effects

The powdered dried root of *A. racemosus* is used in Ayurveda for dyspepsia. Oral administration of powdered dried root of *A. racemosus* has been found to promote gastric emptying in healthy volunteers. Its action is reported to be comparable with that of the synthetic dopamine antagonist metoclopramide. In Ayurveda, *A. racemosus* has also been mentioned for the treatment of ulcerative disorders of stomach and Parinama Sula, a clinical entity akin to the duodenal ulcer diseases. The juice of fresh root of *A. racemosus* has been shown to have definite curative effect in patients of duodenal ulcers.

Antihepatotoxic activity

Alcoholic extract of root of *A. racemosus* has been shown to significantly reduce the enhanced levels of alanine transaminase, aspartate transaminase and alkaline phosphate in CCl₄ induced hepatic damage in rats, indicating antihepatotoxic potential of *A. racemosus*.

Cardiovascular effects

Alcoholic extract of the root of *A. racemosus* has been reported to produce positive inotropic and chronotropic effect on frog heart with lower doses and cardiac arrest with higher doses. The extract was found to produce hypotension in cats, which was blocked by atropine, indicating cholinergic mechanism of action. The extract also produced congestion and complete stasis of blood flow in mesenteric vessels of mice and rat, slight increase in the bleeding time and no effect on clotting time was observed on i.v. administration of the extract in rabbits.

Antidiabetics

Ethanol extract of *A. racemosus* causes lowering the blood sugar level.

Antioxidant effects

The possible antioxidant effects of crude extract and purified aqueous fraction of *A. racemosus* against membrane damage induced by the free radicals generated during gamma radiation were examined in rat liver mitochondria.

Antidepressant activity

A. Racemosus show antidepressant activity due to presence of saponins.

Diuretic activity

Acute toxicity study showed no fatality even with the highest dose, and the diuretic study revealed significant diuretic activity in dose of 3 200 mg/kg.

Antihepatotoxic activity

Alcoholic extract of root of A. racemosus has been shown to significantly reduce the enhanced levels of alanine transaminase, aspartate transaminase and alkaline phosphatase in CC14-induced hepatic damage in rats, indicating antihepatotoxic potential of A. racemosus.

Effects on uterus

Inspite of cholinergic activity of A. racemosus on guinea pig's ileum, ethyl acetate and acetone extracts of the root of A. racemosus blocked spontaneous motility of the virgin rat's uterus. These extracts also inhibited contraction, induced by spasmogens like acetylcholine, barium chloride and 5-hydroxytryptamine whereas alcoholic extract was found to produce a specific block of pitocin induced contractions. On the other hand petroleum ether as well as ether extracts of the powdered roots did not produce any uterine activity. It indicates the presence of some particular substance in the alcoholic extract which specifically blocks pitocin sensitive receptors though not other receptors in the uterus, confirming that Shatavari can be used as uterine sedative. Further, a glycoside, Shatavarin I, isolated from the root of A. racemosus has been found to be responsible for the competitive block of oxytocin-induced contraction of rat, guinea pig and rabbit's uteri, in vitro as well as in vivo.

CONCLUSION

So many studies have been conducted on different parts of A. racemosus. The plant has developed as a drug by pharmaceutical industries. More research is required for identification, cataloguing and documentation of plants, which may provide a meaningful way for promoting traditional knowledge of herbal drugs.

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