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**REVIEW ARTICLE**

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Asparagus racemosus--an update.

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- ☐ Abstract

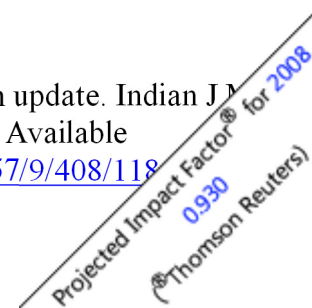
Asparagus racemosus (Shatavari) is recommended in Ayurvedic texts for prevention and treatment of gastric ulcers, dyspepsia and as a galactogogue. A. racemosus has also been used successfully by some Ayurvedic practitioners for nervous disorders, inflammation, liver diseases and certain infectious diseases. However, no scientific proof justifying aforementioned uses of root extract of A. racemosus is available so far. Recently few reports are available demonstrating beneficial effects of alcoholic and water extracts of the root of A. racemosus in some clinical conditions and experimentally induced diseases, e.g. galactogogue effect, antihepatotoxic and immunomodulatory activities. The present article includes the detailed exploration of pharmacological properties of the root extract of A. racemosus reported so far.

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❑ Introduction



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**Figures and Tables**

Table 1: Effects of *A. racemosus* on different systems

Organization	Extract studied	Properties
Gastrointestinal tract	Root powder	Promotes gastric emptying, increases gastric acid, and inhibits gastrin.
	Fresh root juice	Urohealthy and antileukogenic.
	Root powder of <i>A. racemosus</i> with Terminalia chebula	Cytoreactive on gastric mucosa.
	Alcoholic extract	
	Ether extract	Smooth muscle contraction.
Galactagogue effect	Alcoholic extract	Maternal and lactogenic.
	Root powder of <i>A. racemosus</i> along with some other herbal galactagogues	Galactagogue in females and animals.
Uteric	Fresh root	Galactagogue in humans.
	Ether extract	
	Alcoholic extract	Anticancer activity.
Immunomodulatory activity	Alcoholic extract	Immunomodulatory.
	Alcoholic extract	Disinfectant, antiseptic, antiparasitic.
Uter	Alcoholic extract	Anticancer activity.
Anticancer activity	Alcoholic extract	Anticancer activity.
Cardiovascular	Alcoholic extract (low dose)	Positive inotropic and chronotropic effect.
	Alcoholic extract (high dose)	Cardiac arrest.

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The genus *Asparagus* has been recently moved from the subfamily *Asparagae* in the family *Liliaceae* to a newly created family *Asparagaceae*. The *Asparagus* genus is considered to be of medicinal importance because of the presence of steroidal saponins and sapogenins in various parts of the plant.[1] *Asparagus* is the Greek word for “stalk” or “shoot”. About 300 species of *Asparagus* are known to occur in the world. Some of the European species to be mentioned are *A. officinalis*, *A. sprengeri* and *A. acutifolius*. *A. officinalis* is reported to be a popular vegetable consumed in many parts of the world.[2]

Out of several species of '*Asparagus*' grown in India, *A. racemosus*, *A. gonaclades* and *A. adsendens* are most commonly used in indigenous medicine.[3] *A. racemosus* is commonly mentioned as a *rasayana* in the *Ayurveda*. *Rasayanas* are those plant drugs which promote general well being of an individual by increasing cellular vitality or resistance. A study of ancient classical *Ayurvedic* literature claimed several therapeutic attributes for the root of *A. racemosus* (Hindi:-*Shatavari*) and has been specially recommended in cases of threatened abortion and as a galactagogue.[4] Root of *A. racemosus* has been referred as bitter-sweet, emollient, cooling, nervine tonic, constipating, galactagogue, aphrodisiac, diuretic, rejuvenating, carminative, stomachic, antiseptic[5] and as tonic. Beneficial effects of the root of *A. racemosus* are suggested in nervous disorders, dyspepsia, diarrhoea, dysentery, tumors, inflammations, hyperdipsia, neuropathy, hepatopathy,[6] cough, bronchitis, hyperacidity and certain infectious diseases. However no scientific proof, justifying all the above uses of the root of *A. racemosus* is available so far. This review describes various pharmacological properties of the root extract of *A. racemosus* evaluated/reported so far [Table - 1].

❑ Gastrointestinal effects

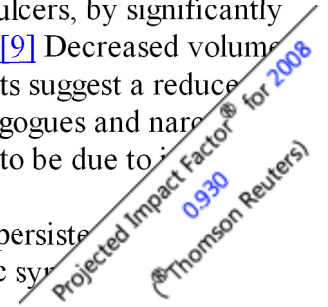


The powdered dried root of *A. racemosus* is used in *Ayurveda* for dyspepsia. Oral administration of powdered dried root of *A. racemosus* has been found to promote gastric emptying in healthy volunteers. Its action is reported to be comparable with that of the synthetic dopamine antagonist metoclopramide.[7]

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.[8]

*A. racemosus* along with *Terminalia chebula* reported to protect gastric mucosa against pentagastrin and carbachol induced ulcers, by significantly reducing both severity of ulceration and ulcer index.[9] Decreased volume and increased pH of the secretions in drug treated rats suggest a reduced responsiveness of the gastric parietal cells to secretagogues and narcotic agents.[9] Cytoprotective effect has been suggested to be due to increased output of mucus.

Singh et al[10] showed that *Shatavari* promptly and persistently relieved pain and burning sensation as well as other dyspeptic symptoms.



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duodenal ulcer. Since Shatavari did not have antacid and anti-secretory properties, the observed mild reduction in acid secretion may be due to some changes in gastric mucosa.

Shatavari has been suggested to heal the ulcers by potentiating defensive factors and many hypothesis have been put forward for its possible mechanism[10]:

(i) It may prolong the life span of mucosal cells, increase the secretion and viscosity of mucus and strengthen the mucosal barrier and thus reduces H<sup>+</sup> ion back diffusion into the mucosa.

(ii) Shatavari may form a complex with mucus of other substances at the base of ulcer which may protect the ulcer from the corrosive and proteolytic effects of acid-pepsin.

(iii) It may have cytoprotective action like that of prostaglandins.

Other possible mechanism may be deactivation and binding of pepsin or of bile salts.

In addition to antiulcerogenic activity of *A. racemosus* in clinical trials, De et al[11] demonstrated similar effects of fresh root juice of *A. racemosus* in rats, using cold stress and pyloric-ligation induced gastric ulcer. In contrast to previous report[10] these workers suggested a reduction in acid and pepsin contents (aggressive factors) and increase in mucin-bicarbonate secretions and life span of the mucosal cells (defensive factors).

Anti-ulcerogenic effect is suggested to be due to the regulation of the above two factors.[12]

Various extracts from the root of *A. racemosus* have been shown to cause contraction of smooth muscles of rabbit's duodenum, guinea pig's ileum and rat's fundal strip without affecting peristaltic movement. These actions were found to be similar to that of acetylcholine and were blocked by atropine, suggesting a cholinergic mechanism of action.[13] However, no effect was observed on isolated rectus abdominus.

□ Galactogogue effect ↑

The root extract of *A. racemosus* is prescribed in Ayurveda to increase milk secretion during lactation.[4] *A. racemosus* in combination with other herbal substances in the form of 'Ricalex' tablets (Aphali pharmaceutical Ltd. Ahmednagar) has been shown to increase milk production in females complaining of deficient milk secretion.[14] Gradual decrease in milk secretion, on withdrawal of the drug suggested that the increase in milk secretion was due to drug therapy only and not due to any psychological effect.

Systemic administration of the alcoholic extract of *A. racemosus* in weaning rats increased weight of the mammary glands, inhibited involution of lobulo-alveolar tissue and maintained milk secretion.[15] The same extract in estrogen-primed rats showed well developed lobulo-alveolar tissue and lactation. Increase in mammary gland weight and growth of the lobulo-alveolar tissue may be due to the action of released corticoids and prolactin.[16]

In an another study, *A. racemosus* alongwith some other herbal s... in the form of a commercial preparation, lactare (TTK Pharma... reported to enhance milk output in women complaining of... milk, on 5th day after delivery.[17] A significant increas...

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also been observed in guinea pigs and goats after feeding lactare which also increased growth of the mammary glands, alveolar tissues and acini in guinea pigs.[18] Patel et al[19] have also shown galactogogue effect of roots of *A. racemosus* in buffaloes. However, Sharma et al[20] did not observe any increase in prolactin levels in females complaining of secondary lactational failure with *A. racemosus* suggesting that it has no lactogenic effect.

#### □ 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.[13] 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,[13] 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.[21]

#### □ Immunomodulatory activities

Intra-abdominal sepsis are major causes of mortality following trauma and bowel surgery. Immunomodulating property of *A. racemosus* has been shown to protect the rat and mice against experimental induced abdominal sepsis.[22],[23] Oral administration of decoction of powdered root of *A. racemosus* has been reported to produce leucocytosis and predominant neutrophilia along with enhanced phagocytic activity of the macrophages and polymorphs. Percentage mortality of *A. racemosus* treated animals was found to be significantly reduced while survival rate was comparable to that of the group treated with a combination of metronidazole and gentamicin. [22],[23] Since *A. racemosus* is reported to be devoid of antibacterial action, so protection offered by *A. racemosus* against sepsis by altering function of macrophages, indicates its possible immunomodulatory property.[22] Further, oral administration of total extract of *A. racemosus* has been shown to reduce all the three attributes of adhesions viz number, character and area markedly in an animal model of intraperitoneal adhesions.[24] Dhuley[25] has reported the revival of macrophage chemotaxis and interleukin-I (IL-I) and tumor necrosis factor a(TNFa) production by the oral treatment of *A. racemosus* root extract in ochratoxin A treated mice. Alcoholic extract has been found to enhance both, humoral and cell mediated immunity of albino mice injected with sheep red blood particulate antigen.[26]

#### □ Antihepatotoxic activity

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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,[\[26\]](#) indicating antihepatotoxic potential of *A. racemosus*.

#### ☐ Antineoplastic activity

Chloroform/methanol (1:1) extract of fresh root of *A. racemosus* has been reported to reduce the tumor incidence in female rats treated with DMBA (7,12dimethyl benz (a) anthracene).[\[27\]](#) This action is suggested to be mediated by virtue of mammotropic and/or lactogenic[\[15\]](#) influence of *A. racemosus* on normal as well as estrogen- primed animals, which renders the mammary epithelium refractory to the carcinogen.[\[27\]](#)

#### ☐ Cardiovascular effects

Alcoholic extract of the root of *A. racemosus* has been reported to produce positive inotropic and chronotropic effect on frog's 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 mesentric 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.[\[28\]](#)

#### ☐ Effect on respiratory system

Higher doses of the alcoholic extract of root of *A. racemosus* are reported to cause dilatory effect on bronchial musculature of guinea pigs but failed to antagonise the histamine induced broncho-constriction. The extract has also been reported to produce depression of respiration in cat.[\[28\]](#)

#### ☐ Effect on CNS

Neither stimulant nor depressant action of lactare on central nervous system has been reported in albino mice.[\[18\]](#) Shatavari did not produce catalepsy in experimental rats even with massive oral doses suggesting that its action may be outside the blood-brain barrier, similar to that of metoclopramide.[\[7\]](#)

#### ☐ Miscellaneous effects

Alcoholic extract of root of *A. racemosus* was found to have slight diuretic effect in rats and hypoglycemic effect in rabbits, but, no anticonvulsant and antifertility effect was observed in rats and rabbits respectively. However did show some anti-amoebic effect in rats.[\[28\]](#)

#### ☐ Toxic effects

In Ayurveda, *A. racemosus* has been described as absolute term use, even during pregnancy and lactation. Systemic

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higher doses of all the extracts did not produce any abnormality in behaviour pattern of mice and rat.[13] LD[50] of the product lactare has not been assessed since it did not produce mortality even upto the oral dosages of 64 gm/kg.[18]

#### □ References ↑

1. Oketch-Rabah HA. Phytochemical Constituents of the Genus Asparagus and their biological activities. Hamdard 1998;41:33-43. ↑
2. Shao YU, Poobsasert O, Kennelly EJ, Chin CK, Ho CT, Huang MT, Garrison SA, Cordell GA. Steroidal saponins from *Asparagus officinalis* and their cytotoxic activity. *Planta Medica* 1997;63:258-62. ↑
3. Rao SB. Saponins (Sapogenins) from Indian Medicinal Plants:- Part I Sapogenins from *Asparagus*. *Indian J Pharmacy* 1952;14:131-2. ↑
4. Nadkarni AK. *Indian Materia Medica*. Bombay: Popular Book Depot; 1954. Vol I. pp.153-5. ↑
5. Chopra RN, Chopra IC, Handa KL, Kapur LD. *Indigenous drugs of India*. Calcutta: Academic Publishers; 1994. pp. 496. ↑
6. Sharma PC, Yelne MB, Dennis TJ. *Data base on medicinal plants used in Ayurveda*. Delhi: Documentation & publication Division, Central Council for Research in Ayurveda & Siddha; 2000. Vol I. pp. 418-30. ↑
7. Dalvi SS, Nadkarni PM, Gupta KC. Effect of *Asparagus racemosus* (Shatavari) on gastric emptying time in normal healthy volunteers. *J Postgrad Med* 1990;36:91-4. ↑ [\[PUBMED\]](#) [\[FULLTEXT\]](#)
8. Kishore P, Pandey PN, Pandey SN, Dash S. Treatment of duodenal ulcer with *Asparagus racemosus* Linn. *J Res Indian Med Yog Homeo* 1980;15:409-15. ↑
9. Dahanukar SA, Date SG, Karandikar SM. Cytoprotective effect of *Terminalia chebula* and *Asparagus racemosus* on gastric mucosa. *Indian Drugs* 1983;21:442-5. ↑
10. Singh KP, Singh RH. Clinical trial on Satavari (*Asparagus racemosus* Willd.) in duodenal ulcer disease. *J Res Ay Sid* 1986;7:91-100. ↑
11. De B, Maiti RN, Joshi VK, Agrawal VK, Goel RK. Effect of some Sitavirya drugs on gastric secretion and ulceration. *Indian J Exp Biol* 1997;35:1084-7. ↑ [\[PUBMED\]](#)
12. Goel RK, Bhattacharya SK. Gastroduodenal mucosal defense and mucosal protective agents. *Indian J Exp Biol* 1991;29:701-14. ↑ [\[PUBMED\]](#)
13. Jetmalani MH, Sabins PB, Gaitonde BB. A study on the pharmacology of various extracts of Shatavari- *Asparagus racemosus* (Willd). *J Res Ind Med* 1967;2:1-10. ↑
14. Joglekar GV, Ahuja RH, Balwani JH. Galactogogue effect of *Asparagus racemosus*. *Indian Med J* 1967;61:165. ↑ [\[PUBMED\]](#)
15. Sabins PB, Gaitonde BB, Jetmalani M. Effect of alcoholic extract of *Asparagus racemosus* on mammary glands of rats. *Indian J Exp Biol* 1968;6:55-7. ↑
16. Meites J. *Proceedings of the first international pharmacology*. London: Pergamon Press; 1962. Vol I. pp. 151. ↑
17. Sholapurkar ML. Lactare-for improving lactation. *India* 1986;39:1023-6. ↑

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18. Narendranath KA, Mahalingam S, Anuradha V, Rao IS. Effect of herbal galactagogue (Lactare) a pharmacological and clinical observation. *Med Surg* 1986;26:19-22. [+](#)
19. Patel AB, Kanitkar UK. *Asparagus racemosus* Willd. Form Bordi, as a galactagogue, in buffaloes. *Indian Vet J* 1969;46:718-21. [+](#)  
[\[PUBMED\]](#)
20. Sharma S, Ramji S, Kumari S, Bapna JS. Randomized controlled trial of *Asparagus racemosus* (Shatavari) as a lactagogue in lactational inadequacy. *Indian Pediatr* 1996;33:675-7. [+](#) [\[PUBMED\]](#)
21. Joshi J, Dev S. Chemistry of Ayurvedic crude drugs: Part VIIIa-Shatavari-2: Structure elucidation of bioactive Shatavarin-I & other glycosidesb,c. *Indian J Chem* 1988;27B:12-6. [+](#)
22. Dahanukar S, Thatte U, Pai N, Mose PB, Karandikar SM. Protective effect of *Asparagus racemosus* against induced abdominal sepsis. *Indian Drugs* 1986;24:125-8. [+](#)
23. Thatte U, Chhabria S, Karandikar SM, Dahanukar S. Immunotherapeutic modification of *E. coli* induced abdominal sepsis and mortality in mice by Indian medicinal plants. *Indian Drugs* 1987;25:95-7. [+](#)
24. Regh NN, Nazareth HM, Isaac A, Karandikar SM, Dahanukar SA. Immunotherapeutic modulation of intraperitoneal adhesions by *Asparagus racemosus*. *J Postgrad Med* 1989;35:199-203. [+](#)
25. Dhuley JN. Effect of some Indian herbs on macrophage functions in ochratoxin A treated mice. *J Ethnopharmacol* 1997;58:15-20. [+](#)  
[\[PUBMED\]](#) [\[FULLTEXT\]](#)
26. Muruganadan S, Garg H, Lal J, Chandra S, Kumar D. Studies on the immunostimulant and antihepatotoxic activities of *Asparagus racemosus* root extract. *J Med Arom PI Sci* 2000;22:49-52. [+](#)
27. Rao AR. Inhibitory action of *Asparagus racemosus* on DMBA-induced mammary carcinogenesis in rats. *Int J Cancer* 1981;28:607-10. [+](#)  
[\[PUBMED\]](#)
28. Roy RN, Bhagwager S, Chavan SR, Dutta NK. Preliminary pharmacological studies on extracts of Root of *Asparagus racemosus* (Satavari), Willd, N.O. Liliaceae. *J Res Ind Med* 1971;6:132-8. [+](#)



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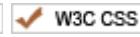
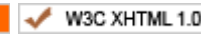
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