



REVIEW ARTICLE

ASPARAGUS racemosus- WONDER PLANT

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Manuscript Info**Manuscript History:**

Received: 11 February 2014
 Final Accepted: 22 March 2014
 Published Online: April 2014

Key words:

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Abstract

Asparagus racemosus is a medicine plant. Different species of Asparagus are present in India and all over the world. Every part of Asparagus racemosus as- stem, root, leaves, are use to prevent disease in both humans and dairy animals. In which many minerals and chemical constituents are present. They show some antibacterial, hormonal, antitussive, diuretic activity. Asparagus racemosus (shatavari) mostly show good result on the reproductive systems of women's. In Ayurveda shatavari used for dyspepsia and dysentery in dairy animals. They have some adaptogen and antioxidant property.

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Introduction:

In India thousands of species are known to have medicinal values and the use of different parts of several medicinal plants to cure specific ailments has been in vogue since ancient times (Parekh et al., 2005). Asparagus racemosus Wild is a member of Liliaceae plant family (Madhavan et al., 2010). Due to its multiple uses, the demand for Asparagus racemosus is constantly on the rise. Due to destructive harvesting, combined with habitat destruction, and deforestation, the plant is now considered 'endangered' in its natural habitat. Asparagus racemosus (shatavari) is recommended in Ayurvedic texts for the 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 (Goyal et al., 2003). Asparagus racemosus is a woody climber growing to 1-2 m in height. The leaves are like pine needles, small and uniform and the flowers are white and have small spikes. In Sanskrit this plant is called shatavari which means 'able to have one hundred husbands' and in Ayurveda this amazing herb is known as the "queen of herbs" because it promotes love, special affinity to women health and devotion and as it to women health and devotion and as it increases the capacity for lovemaking (Simon, 1997). The aim of this review is presented all the information about Asparagus racemosus in every field as cosmetics, human disease treatment, animal treatment, hormonal activity, antitussive activity etc. on the basis of this we called Asparagus racemosus a wonder plant.

Scientific classification:

Kingdom: Plantae
 clade: Angiosperms
 clade: Monocots
 Order: Asparagales
 Family: Asparagaceae
 Subfamily Asparagoideae

Genus: Asparagus

Species: racemosus

Binomial name: Asparagus racemosus

Mineral contents:

In A.racemosus different mineral content are present as Ca, Mg, K, Fe, Cu, Mn, Zn, Cu in different parts as root, stems, leaves, flowers, seed, and twigs.

Chemical constituents:

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. Synthesis of sarsasapogenin in the callus culture of A.racemosus was also reported (Kar and Sen, 1985). A new isoflavone, 8-methoxy-5,6,4'-trihydroxyisoflavone-7-O- β -D-glucopyranoside was also reported from previously (Saxena V. K. and Chaurasia, 2001) The isolation and characterization of polycyclic alkaloid called asparagamine (Sekine et al., 1994).

Harmonal activity:

Pure 9, 10-dihydrophenanthrene has been shown to interact with androgen receptors and may therefore inhibit androgen-dependent prostatic growth (Chang and Liao, 1987)

Antitussive activity:

The methanol extract of Asparagus racemosus root (200 and 400 mg/kg) showed significant antitussive activity on sulfur dioxide-induced cough in mice, the cough Inhibition (40.0 and 58.5%, respectively) being comparable to that of 10-20 mg/kg of codeine phosphate (36.0 and 55.4%, respectively) (Mandal et al., 2000).

Diuretic activity:

Shatavari has been shown to inhibit antidiuretic hormone (ADH) (Gaitonde and Jetmalani, 1967).

Toxicity:

The LD50 is >1g/kg. No toxic effects or mortality were observed with doses ranging from 50mg/kg to 1g/kg for four weeks. Acute and sub acute (15-30 days administration) toxicity studies did not detect any changes in vital organ function tests (Rege and Thatte, 1999).

A.racemosus in dairy animals:

The powdered dried root of A. racemosus is used in Ayurveda for dyspepsia, indigestion and dysentery. 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 (Goel and Sairam, 2002). Oral administration of powdered dried root of A. racemosus has been found to promote digestibility and dry matter intake in healthy as well as in problematic animals without disturbing rumen parameters with decrease in protozoan counts which work as a predator for beneficial bacteria (Pradhan, 1995).

A. racemosus and reproductive health:

Shatavari have beneficial effects in women and reproductive function. Asparagus racemosus is well known for its effects on the female reproductive system and used in all female related problems such as PMS and sexual debility (Frawley, 1989), ammenorrhea, dysmenorrhea, dysfunctional uterine bleeding (Swarup and Umadevi, 1988; Chopra and Simon, 2000) and gonorrhoea (Thomson, 2002). It also supports deeper tissue and builds blood and so it helps to remove infertility, prepare the womb for conception, prevents miscarriage and acts as a post-partum tonic where it helps to increase lactation and normalize the uterus, prolapse of uterus and the balancing reproductive hormones level (Swarup and Umadevi, 1988; Tirtha, 1998; Mitra et al., 1999).

A. racemosus and udder health:

Asparagus racemosus are helped in division of lobuloalveolar tissue which are destroyed after every let down of milk. The effects of intramuscular administration (250mg/ kg) of the crude alcoholic extract of the root were studied

in post partum, estrogen-primed and non-primed rats. The extract increased the weight of mammary glands in post partum and estrogen-primed rats and the uterine weight in estrogen-primed group. The increase in the weight of adrenals coupled with the depletion of ascorbic acid suggested the release of pituitary ACTH. Estrogen primed rats receiving the extract showed well developed lobulo-alveolar tissue with milk secretion. The mechanism of action of the extract may be through a direct action on the mammary gland or through the pituitary or pituitary adrenal axis due to the secretion of prolactin and ACTH (Jetmalani, 1967; Sabnis, 1968). *A. racemosus* can also be helped in the mastitis prevention through its anti-microbial properties. The main causal organisms of mastitis are Streptococci, Coliform (*E. coli*), Klebsiella, Pseudomonas, Proteus sp. (Singh, 1991) and alcoholic extract of the root was found to possess in vitro antibacterial activity against mentioned mastitis causing bacteria such as Streptococci, Coliform (*E. coli*), Klebsiella, Pseudomonas (Bhatnagar et al., 1961; Ahmad et al., 1988).

A. racemosus as an oxidant:

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) 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 (Bhatnagar et al., 2005). The anti oxidant properties was found due to presence of Isoflavons specially racemofuran, asparagamine A and racemosol (Wiboonpun et al., 2004).

A. racemosus as adaptogen:

Adaptability is probably the most distinct characteristics of the life in animal kingdom. Dr. Hans Seyle defines stress as the sum of all non specific response of the body to any external stimuli acting up on it. Perhaps adaptability is the single most important property of animals and it found naturally in all the animals more or less (Azmathulla and Hule, 2006). The dairy animals are directly more exposed to the environment and suffer severely to environmental stress. Some time it increases beyond the limit and consequently reduction in productivity and reproductively in terms of quality and quantity both. There are few places in the world and none in India where the natural climate continuously remain optimum for dairy animals. Therefore, it is a dire need that some herbal supplementary measure should be adopted with stress remover managemental practices to overcome the stress effect effectively. *Asparagus racemosus* one of the best ado pathogenic herb, which can be easily used in dairy animal. As it proved that supplementation of standardize extract of *Asparagus racemosus* along with some other herbs (EuMil 100mg/kg BW 14 days) normalized the perturbed regional noradrenaline, dopamine, and 5- hydroxytryptamine concentration, induced by chronic stress (Azmathulla and Hule, 2006; Bhattacharya et al., 2002; Muruganandan et al., 2002).

Conclusion:

After study we conclude that the *Asparagus racemosus* has many medicinal properties. In India it use many years in ayurveda. The use of this is very useful and supported for animals and human beings.

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Figure: 1 Image of *A.racemosus*



Figure: 2 long leaf of *Asparagus racemosus*

Table: 1 Different species of *Asparagus* with author name

Author name	Species name	Images
LAM	<i>Asparagus africanus</i>	
(L.) oberm	<i>Asparagus aethiopicus</i>	
(L.) druce	<i>Asparagus falcatus</i>	

L.	<i>Asparagus officinalis</i>	
Kunth(jessop)	<i>Asparagus setaceus</i>	
Baker	<i>Asparagus virgatus</i>	
Willed	<i>Asparagus racemosus</i>	

Table: 2 Mineral contents in different part of *Asparagus racemosus* (Dry plant material figures in g/100gms) are given below (Choudhary and Kar, 1992).

Element	Root	Stem	Leaves	Twigs	Flowers	Seeds
Ca	0.192	0.115	0.115	0.417	0.424	0.022
Mg	0.100	0.043	1.300	0.430	0.340	0.050
K	2.05	1.63	1.29	3.47	4.79	1.78
Fe	0.004	0.002	0.010	0.004	0.007	0.003
Figures in microgram/gm						
Cu	3.28	3.45	3.13	4.33	13.03	4.55
Zn	39.17	30.04	64.95	36.38	117.97	30.39
Mn	9.73	5.50	48.29	21.82	28.14	6.41
Co	12.41	18.40	29.46	17.91	43.46	10.41

Table: 3 Medicinal uses of *Asparagus racemosus*

Plant part	Uses	References
Root powder ,leaves	Cleanses nourishes	(Frawley, 1989)
Tuberous root	Ammenorhea, Dysmenorrhea	(Swarup and Umadevi, 1988; Chopra and Simon, 2000)
Tuber, leaves, fruit	Gonorrhea	(Thomson, 2002)
Natural herb	Arthritis	(Chaturvedi and Singh, 1965)
Root	Thirst, sunstroke	(Kapoor, 1990)
Root powder and leaves	Peptic ulcers	(Sairam et al., 2003)
Root	Immunostimulant	(Dahanukar and Thatte, 1997)
Root powder and leaves	Anabolic	(Sharma et al., 1986)
Root powder and leaves	Antitumor activity	(Rege et al., 1989)
Fresh mature leaves and flowers	Antiviral	(Rajbhandari et al., 2001)