“SHATAVARI: ONE SOLUTION FOR VARIOUS FEMALE HEALTH ISSUES” A REVIEW

Pradip Kinage1* and Deepika Chaudhari2

1*Asst. Professor, Dept of Prasuti Tantra & Striroga, Mahatma Gandhi Ayurveda College Hospital and Research centre, Salod (H), Maharashtra, India.
2Asst. Professor, Dept of Sharir Kriya, R D Memorial PG College of Ayurveda, Bhopal, Madhya Pradesh, India.

ABSTRACT
Shatavari (Asparagus racemosus) is one of the important medicinal herbs, used by Ayurveda peoples. It is considered as a general tonic and female reproductive tonic. Shatavari is scandent climber, tall climbing excessively branched, prickly under shrub, distributed throughout India, tropical and subtropical parts including Andamans and almost commonly ascending up to an altitude of 4000 feet in the Himalayas and in Ceylon. Shatavari is having Shukrajanana, Balya, Rasayan, Garbhaposhak, Stanyajanana, Shulhar, Grahi, Hrudya, Mutral, Raktabharshamak properties. It is used for various female disorders like menstrual problems, infertility, menopause etc. Shatavari is extremely useful in antenatal care to promote health of mother and growing fetus. It helps to prevent abortions and also increases lactation. Present research is done to study the nature of Asparagus racemosus, its active components and its uses in gynecological diseases and exploiting future scope of Asparagus racemosus in management of various female health issues.

KEYWORDS: Abortion, Garbhaposhak, infertility, lactation, Shatavari.

INTRODUCTION
Asparagus racemosus, traditionally known as Shatavari is one of the important medicinal herbs for human health care system. It belongs to Asparagaceae family. It is being traditionally used as female reproductive tonic. Shatavari is known by various names like Indeevari, Sukshamapatra, Bahusuta, Shatmooli, Narayani etc. Shatavari is having Madhur-
tikta Ras (Sweet-bitter taste), Madhur Vipaka (Post digestive effect) and Sheet Virya (Cold Potency).\textsuperscript{[1]} Besides many actions, diuretic, antispasmodic, rejuvenating, galactagogue, nerve tonic are important one. Gonorrhoea, leucorrhoea, tuberculosis, agalactia, inflammations, tumours, burning micturition are few of many conditions that can be treated with Shatavari. The basic principle of Ayurveda is “swasthasya swastha rakshanam athurasya vikar prasamanam”.\textsuperscript{[2]} Shatavari has important role to maintain Swasthya (Health) of female as having actions of Rasayan and Balya. Swasthya of fetus is dependent on Garbhini (Pregnant lady).

Wellbeing of Garbha (Fetus) can be achieved only through well being of Garbhini. Having Madhur Rasa, Shatavari is known to be Garbhashapak (Maintains pregnancy), useful in the prevention of abortions. As it is Garbhaposham (nutritive to fetus) and having anabolic action, useful for growing healthy baby and pregnant lady also. Galactagogue function of Shatavari is well known, useful in Stanyakhsya (inadequate lactation). Besides these, Shatavari has capacity to treat many female diseases (Athurasya vikar prasamanam) like polycystic ovarian diseases, Dysmenorrhea, Premenstrual syndrome, Infertility and Menopause.\textsuperscript{[3]} It means Shatavari is very potential plant, should be cultivated on large scale and utilized in various health issues of human beings especially in females.

**METHODOLOGY**

**Search criteria:** Original articles, research papers published in journals and in Pub med central, Google scholar on Shatavari (Asparagus racemosus), and female disorders were studied out and related articles, papers were taken into consideration. Ayurveda literature including Samhita and Nighantu related to Shatavari (Asparagus racemosus) were also studied out.

Information regarding gynecological disorders was collected from Modern and Ayurveda literature. All the literature was especially studied for medicinal uses of Shatavari in female health issues and taken into consideration. Importance was given to clinical trials carried out on Asparagus racemosus. Finally results were obtained from all collected data and literatures studied.
Plant profile[4]

Table 1: Scientific Classification of Shatavari.

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Sub family</th>
<th>Synonyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantae</td>
<td>Asparagoideae</td>
<td>Indeevari, Sukshampatra, Bahusuta,</td>
</tr>
<tr>
<td>Clade</td>
<td>Angiosperms</td>
<td>Shatmooli, Narayani, Bhiru, Virya,</td>
</tr>
<tr>
<td>Order</td>
<td>Asparagales</td>
<td>Madabhanjani, Shatpadi, Shatvirya</td>
</tr>
<tr>
<td>Family</td>
<td>Asparagaceae</td>
<td></td>
</tr>
<tr>
<td>Latin name</td>
<td>Asparagus racemosus</td>
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</tr>
</tbody>
</table>

Vernacular names[5]

Table 2: Vernacular names of Shatavari

<table>
<thead>
<tr>
<th>English Name</th>
<th>Malyalam: Satavari</th>
<th>Tamil: Kilawari</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oriya: Chhotaru,</td>
<td>Bengali: Shatamuli</td>
<td></td>
</tr>
<tr>
<td>Mohajolo, Sotabori.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gujrati: Eaalkanto, Satavari</td>
<td>Marathi: Asvel, Satavari</td>
<td>Kashmiri: Sejmana</td>
</tr>
<tr>
<td>Rajsthan: Norkanto, Satawar.</td>
<td>Hindi: Satavar</td>
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<td></td>
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<td>Kannad: Callagadda</td>
</tr>
</tbody>
</table>

Distribution: Plant occurs throughout India, tropical and subtropical parts including Andamans and almost commonly ascending up to an altitude of 4000 feet in the Himalayas and in Ceylon.

Plant Description: Shatavari is scandent climber, tall climbing excessively branched, prickly under shrub. Roots are tuberous; prickles 0.6 to 1.5 cm. straight or recurved; eladodes 2.5cm curved, terete, spreading in tufts of 2-6, channeled beneath. Flowers in racemes are 2.5-5cm. Pedicles 0.4cm, jointed in the middle; perianth 0.8-0.12 diameter, Anthers minute; oblong purplish; ovules 6-8 in each cell. Fruit a berry 0.4-0.6 cm diameter, Pea like, red, when ripe; fruit containing seeds 1-2.[6]

![Fig. 1: Roots and leaves of Shatavari](image-url)
Part used: Tuberous root

According to Ayurveda Classics, Shatavari should be used in wet state. But Research has proved that Shatavari in dry form also shows significant concentration of the active constituents. So, dried form of Shatavari can be used in absence of wet drug.[7]

Ayurveda properties (Pharmacodynamics)

Table 3: Ayurveda properties of Shatavari

<table>
<thead>
<tr>
<th>Rasa: Madhur- Tikta</th>
<th>Veerya: Sheeta</th>
<th>Doshaghnata: Vatapittashamak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vipaka: Madhur</td>
<td>Guna: Guru, Snigdha</td>
<td>Charaka Gana: Balya, Madhurskandha, Vayasthapan</td>
</tr>
</tbody>
</table>

Doses: Juice 10-20ml, decoction 50-100ml, powder 3-6gms.

Pharmacological actions: Shukrajanan (Increases sperm count), Balya (Strengthening), Rasayan (Rejuvenating), Garbhaposhak (Nutritive to fetus), Stanyajanana (Galactagogue), Shulhar (Relieves pain), Grahi (Constipating), Hrudya (Cordial), Mutral (Diuretics), Raktabharshamak (Hypotensive), Antiabortifacient.[8]

Chemical Constituents

Important Chemical Constituents of Shatavari includes

Saponins includes shatavarin 1, shatavarin 2, shatavarin 3, shatavarin 4 are present in roots.[9-11] Polycyclic alkaloid like aspargamine A, and disaccharide in roots are also reported in some research.[12] Shatavari contains flavanoids, glycosides of quercitin, rutin and hyperoside are also present in flowers and fruits. Quercetin 3-glucuronide is present in leaves.[13] Few trace minerals like zinc (53.15), manganese (19.98), copper (5.29), cobalt (22.00 microgram per gram) along with calcium, magnesium, potassium, zinc and selenium.[14-15] The callus culture of Shatavari has shown synthesis of sarsasapogenin.[16] A new isoflavone, 8-methoxy-5, 6, 4′-trihydroxyisoflavone-7-O-β-d-glucopyranoside was also isolated from Shatavari previously.[17] The isolation and characterization of polycyclic alkaloid called asparagamine,[18] isolation of a new 9, 10-dihydrophenanthrene derivative named racemosol and kaempferol were also done from the ethanolic root extract of A. racemosus.[19-20]

Formulations and Preparations

Substitutes and Adulterants
It is reported that in Indian markets apart from Asparagus racemosus, the roots of Asparagus sarmentosus Lin. Asparaguscurillus Ham., Asparagus filicinus Ham; Asparagus sprengeri Regel are also being probably sold in the name of Shatavari.[21]

DISCUSSION AND RESULTS
Dysmenorrhea and Premenstrual syndrome (PMS): Dysmenorrhoea literally means painful menstruation. It is one of the most common gynecological problems.[22] Shatavari is effective on female reproductive system and related problems such as PMS and dysmenorrhoa.[23] Study conducted on Shatavari proved that A. racemosus along with some other herbal substances in the form of EveCare was totally effective in all patients with dysmenorrhoa and in 80% of cases with PMS without any adverse effects. It was concluded that EveCare can be used as a safe and cost-effective drug in the treatment of dysmenorrhoa and PMS. Asparagus racemosus contains saponins that might have hinder the oxytocic activity on the uterine musculature, thereby maintaining spontaneous uterine motility.[24]

Abnormal uterine bleeding: Asparagus is useful in the treatment of Raktapradara (Irregular uterine bleeding). Researchers have also proved that Shatavari along with Yashtimadhu is found to be effective in abnormal uterine bleeding. It effectively reduced the amount of bleeding, duration of bleeding and reduces pallor.[25-26]

Polycystic Ovarian Disease (PCOD): Since incidence of Polycystic ovarian disease is increasing, it very important to find effective solution for it. Shatavari can be effectively used for managing this problem. Dayani Siriwardene S A, Karunathilaka L et.al has proved that powder of Shatavari (Asparagus racemosus), along with other herbs taken twice is helpful to correct the hormonal influence and enhances the follicular maturity. It was observed that there is reduction of polycystic appearance of ovaries and improvement of follicular maturity in USG reports. LH/ FSH hormone reports revealed that the ratio came to the normal level, even 75% of the patients get conceived by such management.[27]

Female infertility: It has been demonstrated that the Shatavari containing preparations stimulates haemopoetic function and increase weight of accessory sex glands.[26-27] Enhancing folliculogenesis and ovulation, preparing womb for conception, preventing abortions, Shatavari is beneficial in female infertility.[29-30] Asparagus racemosus extract containing formulation was found to cause an increase in uterine weight and uterine glycogen
without altering serum estrogen progesterone levels in immature rats as against ovariectomized rats used as control. Study also indicates that the phytoestrogen performs its function by binding directly to the estrogen receptor without enhancing the endogenous estrogen levels.\[32\]

**During pregnancy:** Becoming mother of a healthy baby is the sweet dream of every female. Having Madhur Rasa, Shatavari is known to be Garbhasthapak, useful in the prevention of abortions. Antiabortifacient activity of Saponin glycoside A4 produces specific and competitive blockade of pitocin induced contraction and spontaneous motility.\[33\] Asparagus is Rasayan, Balya, Gharbhaposhak with anabolic action, useful for health of growing baby and pregnant lady also. Pregnant lady may lose weight in first trimester of pregnancy due to loss of appetite and vomiting. Pregnant lady feels thirsty if there is decrease in Rasdhatu. Shatavari having Madhur Rasa, Rasayan, anabolic in nature, is useful in the management of Rasakshaya. According to Acharya Charaka, stability of Garbha occurs in forth month of pregnancy hence risk of abortion is more up to 3rd month of pregnancy. Drugs with Madhur Rasa like Shatavari are having Garbhasthapak (stabilise fetus) property, are useful to prevent abortions.\[34-35\]

**During purperium:** Nutritive demand of a neonate completely depends on breast feeding. Inadequate breast feeding affects health of baby. Shatavari is proven herb for increasing lactation. The root extract of *A. racemosus* is prescribed in ayurveda to increase milk secretion during lactation. Oral intake of Shatavari pested with milk is useful in inadequate lactation.\[36\] 'Ricalex' tablets with Shatavari as content (Aphali pharmaceutical Ltd. Ahmednagar) has shown to increase milk production in females complaining of deficient milk secretion.\[37\] Increased weight of the mammary glands was observed in weaning rats, when alcoholic extract of Shatavari was used as Systemic administration ailing with inhibited involution of lobulo-alveolar tissue and maintained milk secretion.\[38\] Enhance milk output is reported in women complaining of scanty breast milk, on 5th day after delivery, treated with *A. racemosus* along with some other herbal substances in the form of a Commercial preparation, lactare (TTK Pharma, Chennai).\[39-40\]

**For menopause:** Ageing affects both physical and mental health of every human being especially in women. In women, menopause is one of the important natural and unavoidable ageing events which occur between 45-55 years. Postmenopausal women are at a risk of developing diseases like osteoporosis, cardiovascular diseases. HRT has its limitations
because of various side effects like breast carcinoma and endometrial carcinoma.[41] Phytoestrogens are now being thought beneficial in such patient and attracting the world. Due to the realization of side effects of hormone replacement therapy, interest in plant-derived oestrogens or ‘phytoestrogens’ has been increased. Phytoestrogens, defined as any plant compound structurally and/or functionally similar to ovarian and placental oestrogens. *Asparagus racemosus* is well known for its phytoestrogenic properties and acts as a hormone modulator and can be effectively used for the management of menopausal females. Being Rasayan and Balya, Shatavari is also useful in the management of Dhatukshaya (Alleviation of body tissues) of menopausal females.[42-43]

Besides these important diseases, Shatavari is also useful in managing infections of microorganisms like *Staphylococcus aureus*, *Staphylococcus wernerii*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Proteus mirabilis*, *Kleibsella pneumonia*, *Pseudomonas putida* and infections diseases like Gonorrhoea, leucorrhoea, tuberculosis, leprosy.[44]

**CONCLUSION**

After going through all these studies, it can be concluded that *Asparagus racemosus* is useful in various female health issues like polycystic ovarian diseases, Dysmenorrhea, Premenstrual syndrome, Infertility and Menopause. Along with this, it is also used as diuretic, antispasmodic, rejuvenating, galactagogue, nervine tonic. Existing preparations of Shatavari can be used for solving female heath issues also there is a great scope for development of new Ayurvedic preparations from *Asparagus racemosus* to treat various female health issues as a result of its effectiveness and safety.

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