

A Review on the Magical Plant: Shatavari (*Asparagus racemosus*)

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Abstract

Shatavari (Asparagus racemosus) is a revered medicinal herb in Ayurveda, recognized for its diverse health benefits, particularly for women's health. The chemical makeup, pharmacological characteristics, and therapeutic uses of shatavari are thoroughly examined in this review. Key active compounds include saponins, flavonoids, and phytoestrogens, which contribute to its adaptogenic, antioxidant, and hormone-regulating effects. These properties make Shatavari effective in addressing female reproductive issues, such as infertility, irregular menstrual cycles, and hormonal imbalances, by enhancing ovulation, uterine health, and cervical mucus production. Its adaptogenic properties also lessen reproductive issues brought on by stress. For skin renewal, shatavari has great promise beyond reproductive health. By encouraging the formation of collagen and supporting hydration, hormonal balance, detoxification, and scar healing, it improves skin texture and lessens the appearance of aging. Its ability to reduce inflammation and preserve the health of the skin is further supported by its anti-inflammatory and antioxidant qualities. Its safety and effectiveness have been shown by previous research, but more research is necessary to define standardized dosages and completely comprehend its mechanisms of action. This review underscores Shatavari's potential as a natural, multifaceted remedy for enhancing women's health and overall well-being, advocating for its integration into traditional and alternative medicinal practices under professional guidance.

Keywords: Shatavari, skin rejuvenation, traditional medicine, reproductive health, herbal cosmetics, hormonal balance and skin health, women's health and skin wellness

INTRODUCTION

Ayurvedic herbs not only aid in preserving the skin's quality but also provide remarkable advantages for the skin, including reducing inflammation and cleansing the body, making it clearer and radiant. By preserving hormonal balance, it also aids in the reduction of outbreaks. *Asparagus racemosus*, a rasayana herb, is the most used species of asparagus in traditional medicine. It is also referred to as shatavari or the "Queen of Herbs" in Ayurveda. Traditional medical systems, like in Ayurveda, Unani, and Siddha, as well as Indian and British Pharmacopoeias, have documented the medicinal properties of this plant. It is found in Sri Lanka, Indonesia, Australia, and other parts of tropical Africa.

The tuberous stem that yields several succulent, tuberous roots (30–100 cm long and 1–2 cm thick), this plant has an outer color of silvery white or ash and an interior color of white. It looks like a spiky under-shrub. Because of its many benefits,

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including balancing hormones, it is well-known for reducing acne and uneven skin tone. Along with its hydrating properties, it keeps the skin looking full and glowing all day. Using conventional methods to address infertility, a prevalent problem among women, can be challenging. For female infertility, women resort to natural treatments, such as Shatavari, a plant. The hormone-regulating qualities of shatavari are thought to help regulate the amounts of progesterone and estrogen in the the body. This hormonal balance can improve the regularity of menstrual cycles; regulate ovulation, thus making it easier for women to conceive. Cervical mucus is known to benefit from it, which facilitates sperm passage through the reproductive system and into the egg. The adaptogenic qualities of shatavari are also well-known for lowering anxiety and stress. Women who are struggling with infertility may find these qualities helpful because stress is known to disrupt the reproductive system. Shatavari hence contributes to better fertility and a higher possibility of conception by lowering stress levels. Research on the use of shatavariis treating infertility is still in its infancy, but some studies have shown promising results. Females who have used shatavari have reported improved menstrual cycles, increased cervical mucus, and increased chances of conceiving.

BOTANICAL DESCRIPTION OF SHATAVARI

The Asparagaceae family includes the climber Shatavari, often called *Asparagus racemosus*. Usually found in tropical and subtropical regions, it is native to Nepal, Sri Lanka, and India. The plant grows up to 1-2 meters in height and has thin, spiky branches that form a dense, bushy canopy. The leaves of the Shatavari plant are small and needle-like, and the flowers are small, white or greenish-white, and arranged in clusters on long, branching stems. When ripe, the plant bears tiny, spherical berries with one or two seeds that become crimson. It has tiny, white blooms on short, pointed stalks. It yields globular berries that are blackish purple in color. A portion of the Shatavari plant is utilized medicinally: the root. It has a long, white, cylindrical, tuberous root that tastes harsh. The plant's roots are collected, dried, and then made into a variety of products, such as powders, teas, and capsules, for use in conventional medicine. It possesses a system of adventitious roots, with approximately 100 tuberous roots per plant, each about a meter long and tapering at both ends.

The herb is utilized as a natural aphrodisiac and is thought to chill the body. Its botanical properties and medicinal uses have made it a popular choice for alternative and natural medicine practitioners around the world (Tables 1–2).

Table 1. Vernacular name.

Language	Name
English	Wild asparagus
Hindi	Satavar
Sanskrit	Indivari, Bahusuta, Madabhanjani, Shatamuli, Shatvirya, Sukshmapatra, Atirasa.
Marathi	Shatavari
Telugu	Pillipichara, Satavari, Callagad
Bengal	Shatamuli
Gujrati	Ekalkanto, Satavari
Kannad	Callagadda, Majjigegadde
Tamil	Satavali
M.P.	Narbodh, Satmooli
Rajasthan	Satawar
Oriya	Chhotaru, Mohajolo

SCIENTIFIC CLASSIFICATION

Plant Part Used

Tuberous Roots, Leaves, flowers and fruits.

Table 2. Scientific classification of *Asparagus racemosus*.

Kingdom	Plantae
Division	Angiosperms
Class	Monocots
Order	Asparagales
Family	Liliaceae
Genus	<i>Asparagus</i>
Species	<i>Asparagus racemosus</i>

Habitat

This climber grows across India, but it is more common in the northern regions. (1954, Nadkarni). The climber reaches a length of 1–2 meters. Description This perennial thorny climber can be found up to 1200 meters in tropical and subtropical regions of India on fanned prickly underbushes. The roots are tuberous, the eladodes are 2.5 cm bended terete, spreading in tufts of 2–6, and the prickles are 0.6–1.5 cm straight or recurved beneath. Racemes of 2.5–5 cm with 0.4 cm pedicels of blossoms. Each cell has six to eight ovules, the perianth is 0.8 to 0.12 diam., the anthers are minute, and the cell is elliptical and purplish. The organic product has seeds [1, 2], the natural product is a berry that is 0.4–0.6 cm in diameter, pea-like, and red when mature.

Phytochemistry of Shatavari

Shatavari's therapeutic qualities are attributed to a variety of phytochemicals. It contains saponins, which are glycosides that have soap-like properties and are responsible for many of the plant's pharmacological effects. The primary saponin found in Shatavari is shatavarin, which is a complex molecule made up of several individual saponins. Shatavarin has been shown to have anti-inflammatory, anti-tumor, and anti-ulcer properties. The plant also contains other saponins like asparagosides, diosgenin, and smilagenin.

Besides saponins, Shatavari also contains flavonoids, like quercetin, kaempferol, and rutin, which are antioxidant compounds that help to protect the body from oxidative stress.

Shatavari also contains a variety of other phytochemicals, including steroidal alkaloids, amino acids, and vitamins. Minerals including calcium, magnesium, and potassium, as well as vitamins A, C, and E, are abundant in the plant. Compounds including phytoestrogens, folic acid, and tryptophan are among the many health benefits of shatavari powder. It also keeps skin looking radiant and lustrous.

The phytochemicals found in Shatavari contribute to its wide range of medicinal uses, including its ability to regulate hormonal balance, improve fertility, and support the immune system. These compounds generally work synergistically to produce the plant's therapeutic effects. The exact mechanisms of action of these compounds are still being studied, the phytochemistry of Shatavari provides a strong basis for its use in traditional an alternative medicine [3–8].

MECHANISM OF ACTION

The mechanism of action of shatavari for female infertility treatment still being studied. It is believed that shatavari may act on several physiological pathways and systems to promote fertility in women.

Shatavari contains phytoestrogens that function similarly to estrogen in the body. An important female hormone that controls ovulation, the menstrual cycle, and reproductive processes is estrogen. Shatavari helps to improve women's overall hormonal balance and fertility by regulating estrogen levels. Studies have shown that oxidative stress and inflammation causes female infertility by damaging reproductive tissues and disrupting normal physiological processes. However, compounds, like saponins and flavonoids, present in shatavarithat have antioxidant and anti-inflammatory effects, & thus protects against oxidative damage and inflammation in the reproductive system.

Shatavari has been shown to possess adaptogenic properties, which helps to reduce stress and improve reproductive function in women [9–15].

Therapeutic Uses of Shatavari [16–23]

Some of the most known therapeutic uses of Shatavari are:

For Female Reproductive Health

Shatavari is a popular herb for female reproductive health. It is thought to improve the regularity of menstrual cycles, enhance cervical mucus production, and control hormonal balance. It is often used to treat infertility, premenstrual syndrome (PMS), and menopause symptoms.

Ovulatory Disorders

Healthy ovulation is essential for conception, and shatavari can support menstrual cycle regulation. It functions through the regulation of the body's hormone levels, especially those that control ovulation. For women who do not ovulate consistently or have irregular periods, shatavari may be a helpful natural treatment.

Low Sperm Count and Quality

Shatavari for male fertility increases the motility of sperm counts. To improve the chances of effective fertilization, several elements are crucial. Shatavari can improve sperm health and solve common male reproductive concerns, increasing the couple's chances of becoming pregnant.

Stress-Related Fertility Issues

Stress is known to disrupt hormonal balance and diminish sexual function, which can have a detrimental effect on fertility in both men and women. Shatavari, being an adaptogen, aids in controlling the body's stress response, which promotes better reproductive functioning and enhances fertility.

Hormonal Imbalances

Shatavari is helpful in correcting hormonal abnormalities, including those involving progesterone and estrogen. By hormonal balance, it can reduce menopausal and PMS symptoms, which may have an indirect impact on fertility.

Immune-Related Reproductive Issues

Strengthening the immune system is another advantage of shatavari for female fertility, as this is crucial for general reproductive health. To preserve overall health and prevent infections that could affect fertility, shatavari strengthens the immune system, which is essential for a successful pregnancy.

Vaginal Dryness

Shatavari can combat vaginal dryness, which can make sexual activity uncomfortable and hence have an indirect impact on fertility. Shatavari can help with reproductive processes and enhance sexual comfort by enhancing natural lubrication.

Regulates Menstrual Cycles

Menstrual periods can be effectively regulated by shatavari. It can assist women with irregular periods achieve a more regular cycle.

Improves Ovulation

Shatavari is thought to encourage the production of gonadotropins, a group of hormones that includes follicle-stimulating hormone (FSH) and luteinizing hormone (LH). By promoting the release of these

hormones, shatavari improves ovulation predictability and a woman's chances of getting pregnant. Those who may have ovulatory problems will benefit.

Improves Uterine Health

Shatavari has a variety of uses in improving uterine health. It makes the uterus stronger and more nourished, which improves the conditions for an embryo to implant and develop. Shatavari can also help to avoid miscarriages by keeping the reproductive organs healthy and functioning during the early stages of pregnancy and ensuring that the uterus is in the best possible condition to support pregnancy.

Increases Cervical Mucus

The cervical mucus makes it easier for sperm to reach the egg for fertilization, it is essential to fertility. By enhancing both the quantity and quality of cervical mucus, shatavari is known to have a beneficial effect on its production. Shatavari contributes to sperm's increased longevity and mobility, which raises the likelihood of successful egg fertilization.

Boosts Libido

The aphrodisiac qualities of shatavari are well known, and they can greatly increase libido in both men and women.

Reduces Stress

Stress often functions as a barrier to reproduction on account of its effects on hormone balance and overall reproductive health. The adaptogen shatavari helps the body cope with stress, both physical and mental. By regulating the stress response, shatavari helps prevent the harmful effects of stress hormones, like cortisol, which can inhibit reproductive hormones necessary for conception.

Antioxidant Properties

Due to its abundance of antioxidants, shatavari is crucial for protecting the body from oxidative stress, which can damage cells, including sperm cells. Reduced sperm quality is linked to oxidative stress, which might affect male fertility. Healthy sperm characteristics including motility, count, and morphology are maintained by antioxidants, which combat dangerous free radicals.

Overall Reproductive Health

It functions as a tonic, giving the reproductive organs and tissues essential nutrition. For women, this includes improving the health of the ovaries and uterus; for men, it promotes the health of seminal fluids and sperm. Shatavari supports the preservation of these organs' and tissues' resilience and efficiency.

Immune Boosting

A strong immune system is necessary for both reproductive health and general well-being. By improving the body's capacity to fend off infections and illness, shatavari strengthens the immune system. Additionally, a healthy immune system promotes general body processes, like inflammation and hormone homeostasis, all of which are essential for preserving fertility [24–30].

For Skin Rejuvenation

Using shatavari for skin has several advantages, some of which are listed below:

Helps in Skin Hydration

Shatavari's inherent moisturizing qualities aid in preserving the skin's hydration and nutrition levels. Additionally, it prolongs the softness and plumpness of the skin. Its strong antioxidant content shields the skin from oxidative damage and early aging.

Maintains Hormonal Imbalance for Clear Skin

The shatavari helps both men and women maintain the hormonal imbalance that is the primary cause of acne, skin irritation, and outbreaks. It also provides additional advantages that support the maintenance of hormonal changes in women's bodies throughout the postpartum phase.

Soothes Skin Irritation

Shatavari provides several health advantages for the skin, including reducing redness, inflammation, and irritation. It aids in achieving a more radiant, even skin tone free from itching and inflammation. It also promotes a smooth and glossy texture and helps combat dark and dingy patches.

Detoxifies Skin

By eliminating all the toxins and impurities that can lead to acne and outbreaks, shatavari aids in the body's detoxification. This cleansing procedure promotes the general health of the skin and keeps the complexion clear.

Scar and Acne Healing Properties

Shatavari has regenerative qualities that help heal scars and UV-induced sun damage, giving a cleaner complexion and a more radiant appearance.

Boosts Collagen Production

Shatavari aids in increasing the production of collagen, which is necessary to preserve the firmness and elasticity of skin. By increasing collagen levels, the appearance of fine lines and wrinkles is reduced, and a smoother complexion is promoted.

Formulation and Dose

For Infertility Treatment

While shatavari can be taken at any time of day, it is usually advised to take it with meals to improve absorption and lower the risk of stomach distress.

Powder: Usually, it is advised to take 1/4 to 1/2 teaspoon twice daily. It is best taken with milk or warm water, especially before meals [31–33]. **Tablets/Capsules:** One to two tablets or capsules per day is generally advised, but you can see your ayurveda specialist or follow the directions on the packaging to determine the appropriate dosage [34–37].

Liquid Extracts: Depending on the extract's content, dosage recommendations will differ significantly, thus it's critical to adhere to product-specific or expert advice [38].

For Skin Rejuvenation [39–45]

It can be used as churnas, pills, etc.. A few methods are as under:

1. **Shatavari Churna:** Incorporating Shatavari Churna into your everyday routine is the simplest method. Shatavari Churna with milk or warm water. This will assist to balance hormones, enhance skin texture, and promote internal skin healing.
2. **Shatavari Tea:** The most common way to ingest Shatavari is through Shatavari tea. Skin hydration and a glowing complexion can be achieved by consistently drinking this tea.
3. **Shatavari Oil:** It helps to combat dryness and provide deep moisture. It helps people with dry or sensitive skin the most.
4. **Shatavari Capsules:** Shatavari capsules, provide skin-rejuvenating properties and promote a more radiant and clearer complexion.
5. **Face Scrub and Shatavari Mask:** Shatavari powder can be used with honey or yogurt to make a face scrub or mask. This encourages skin that is radiant and renewed (Table 3).

It is crucial to remember that these studies only represent a small portion of the research on Shatavari; more studies are required to completely comprehend its potential as a treatment (Table 4).

Not everyone can benefit from these formulations, and it's crucial to speak with a healthcare professional before using any herbal medicines, particularly if you are taking medication or have any underlying medical conditions. Additionally, dosage and duration of treatment may vary based on individual needs and should be determined by a qualified practitioner (Tables 5–6).

Table 3. Study and findings of Shatavari.

Year	Title of Study	Findings
2024	Study of different drying methods for preparation of shatavari powder	The Study showed of different drying methods for preparation of Shatavari powder best method is Tray drying Method [46].
2024	Shatavari supplementation in postmenopausal women alters the skeletal muscle proteome and pathways involved in training adaptation	The study showed that shatavari may support muscle adaptation responses to exercise. These data provide useful signposts for future investigation of shatavari's utility in conserving and enhancing musculoskeletal function in older age [47].
2022	A Comprehensive Review on: Shatavari (<i>Asparagus racemosus</i>)	The study comprises a rigorous scientific examination of <i>Asparagus racemosus</i> root extract to highlight future research potential for this well-known and commercially relevant medication [48].
2021	Comparative study of anti-inflammatory activity of Shatavari	The study showed that Shatavari has potent anti-inflammatory activity and can be used to treat inflammatory conditions [49].
2020	The effect of Shatavari on female reproductive system	The study found that Shatavari can improve female reproductive health, increasing fertility and reducing menstrual irregularities [50].
2019	Shatavari: A phyto-pharmacological review	The review article summarized the pharmacological properties of Shatavari and its uses in traditional medicine [51].
2016	Effects of Shatavari on insulin resistance	The study found that Shatavari can improve insulin resistance and glucose metabolism, making it useful in managing diabetes [52].
2015	Shatavari: A potential herbal drug for breast cancer	The study found that Shatavari has potential as an herbal drug for breast cancer, as it has anti-cancer properties and can inhibit tumor growth [53].
2014	The effect of Shatavari on gastric ulcers	The study found that Shatavari can protect against gastric ulcers and reduce inflammation in the stomach [54].
2012	Antioxidant activity of Shatavari	The study showed that Shatavari has potent antioxidant activity, making it useful in protecting against oxidative stress and cell damage [55].

Table 4. Some common formulations of Shatavari available in the market for female infertility [56–73].

Formulation Name	Ingredients	Dosage Form	Manufacturer
Shatavari Kalpa	Shatavari powder, sugar, cardamom, and other spices	Powder	Baidyanath
Shatavari Churna	Shatavari powder	Powder	Himalaya
Shatavari Granules	Shatavari powder	Granules	Dabur
Shatavari Capsules	Shatavari extract	Capsules	Organic India
Shatavari Ghrita	Shatavari, ghee, and other herbs	Ghee	AVN Ayurveda
Shatavari Tablets	Shatavari extract	Tablets	Patanjali
Shatavari root powder	root powder (Jaivik Bharat certified)	Powder	Carmel Organics Neuherbs Organic Shatavari Powder
Shatavari lactation supplement powder	Supplement Powder	Powder	Zandu

Table 5. Some of the research conducted on Shatavari for female infertility.

Year	Title
2021	Pharmacological properties and clinical studies of Shatavari (<i>Asparagus racemosus</i>) – A comprehensive review [64, 65].
2020	Shatavari (<i>Asparagus racemosus</i>) – A review of its chemical, pharmacological, and clinical properties [66].
2019	Evaluation of anti-ulcer activity of shatavari (<i>Asparagus racemosus</i>) [67].
2018	Phytochemical screening and in vitro antioxidant activity of <i>Asparagus racemosus</i> root extracts
2017	In vitro evaluation of cytotoxic and apoptotic effects of <i>Asparagus racemosus</i> root extract on cancer cell lines [68].
2016	Effect of <i>Asparagus racemosus</i> on the prevention of kidney stone formation – A preclinical study [69].
2015	Shatavari (<i>Asparagus racemosus</i>) root extract prevents DMBA-induced squamous cell carcinoma of skin in Swiss albino mice [70].

2014	An updated review on the phytochemistry, pharmacology, and clinical applications of the Ayurvedic herb Shatavari (<i>Asparagus racemosus</i>) [71].
2013	Evaluation of anti-inflammatory activity of shatavari (<i>Asparagus racemosus</i>) root extract in rats [72].
2012	Antioxidant and anti-inflammatory activities of <i>Asparagus racemosus</i> root extracts in vitro [73].

Table 6. List of Pharmacological Activity of Shatavari.

Year	Title of Study	Findings
2024	Efficacy of medicinal herb <i>Asparagus racemosus</i> (shatavari) as an aphrodisiac feed additive for enhancing reproductive performance of female brood stock of freshwater carp fish, <i>Cyprinus carpio</i> Linn.	A. racemosus root powder can be incorporated in common carp brood stock feed @ 4% for boosting its reproductive potential, with a projected fry production enhancement of 45% [57].
2022	Shatavari (<i>Asparagus racemosus</i> Willd): A herbal boon to women reproductive health and an overview of current research	a detailed account of the plant highlighting its medicinal uses, pharmacological activities on the experimental, preclinical toxicological study along current research potentials [58].
2021	Shatavari Supplementation in Postmenopausal Women Improves Handgrip Strength and Increases <i>Vastus lateralis</i> Myosin Regulatory Light Chain Phosphorylation but Does Not Alter Markers of Bone Turnover	Shatavari may improve muscle function and contractility via myosin conformational change and further investigation of its utility in conserving and enhancing musculoskeletal function, in larger and more diverse cohorts, is warranted [59].
2021	Shatavari (<i>Asparagus racemosus</i>) - The Best Female Reproductive Tonic	general description, phytochemicals, pharmacological properties, ayurvedic properties and folk uses of <i>Asparagus racemosus</i> are briefly explained [60].
2020	Effect of Shatavari on female reproductive system	Shatavari improved ovarian follicular growth and increased serum levels of estradiol and progesterone [61].
2019	The effects of Shatavari on polycystic ovarian syndrome	Shatavari reduced menstrual irregularities and improved ovarian morphology in women with polycystic ovarian syndrome.
2018	The effect of Shatavari on ovarian reserve	Shatavari improved ovarian reserve and follicular growth in women undergoing in vitro fertilization [62].
2016	The effect of Shatavari on pregnancy outcomes	Shatavari supplementation improved pregnancy outcomes, including higher birth weight and fewer preterm deliveries [63].

CONCLUSIONS

When it comes to fertility problems, shatavari is a great help for both men and women. By boosting cervical mucus, promoting uterine health, and regulating hormones—all of which are critical for a healthy fertilization—this herb promotes conception. It increases libido and enhances sperm quality for males. Your chances of getting pregnant can be raised and reproductive health can be naturally and efficiently supported by implementing shatavari fertility treatments into your regimen. Skin rejuvenation: Shatavari provides moisture for the skin and has other benefits, including balancing hormones and healing scars and acne. Incorporate Shatavari into your everyday routine to greatly nourish and hydrate your skin.

- **Digestive Health:** Because of its calming properties, it is thought to be useful in treating digestive disorders, such as acid reflux, heartburn, and ulcers. Along with helping with indigestion, it is also thought to increase appetite.
- **Immune Support:** It possesses immune-boosting properties and is used to support the immune system against infections and diseases.
- **Anti-inflammatory Properties:** Shatavari is helpful in treating ailments, like asthma and arthritis, since it contains chemicals that have anti-inflammatory qualities. Antioxidant Properties: Shatavari contains flavonoids with antioxidant properties that help protect the body from oxidative stress and damage.
- **Respiratory Health:** Shatavari is believed to be beneficial for respiratory health and is used to treat conditions like coughs, colds, and bronchitis.

- *Mental Health*: Shatavari is believed to have a calming effect on the nervous system, & so useful for treating anxiety, stress, and insomnia.

Shatavari is a popular choice in both traditional and alternative medicine due to its medicinal qualities and variety of therapeutic applications.

Based on the available research, shatavari appears to have potential benefits for female infertility. Studies suggest that shatavari may help to balance hormone levels, improve reproductive function, and enhance fertility. Shatavari may also have antioxidant and anti-inflammatory properties that could benefit reproductive health.

There is currently little proof that shatavari helps female infertility; further study is required. Women consult physician should speak with their doctor before changing their treatment plan or using any herbal supplements.

Though further research is required to validate its efficacy and safety, the ideal dosage and period of usage, shatavari appears to be a promising natural treatment for female infertility.

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