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Review article

Recent research and uses of asparagus racemosus (*Shatavari*)

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ABSTRACT

Asparagus racemosus, commonly known as Shatavari, is a well-established herb in Ayurvedic medicine, renowned for its therapeutic properties that have been utilized for centuries. This article explores the recent research on Shatavari, highlighting new trends and emerging uses in modern medicine. Recent pharmacological studies have shed light on the plant's potent anti-inflammatory, antioxidant, and immunomodulatory properties, revealing its potential in managing various health conditions, including arthritis, autoimmune disorders, and gastrointestinal ailments. One of the most well-known applications of Shatavari is its beneficial effects on women's health, particularly in managing hormonal imbalances, promoting lactation, and enhancing fertility.

Keywords: Asparagus racemosus, Shatavari, Immunomodulator, Antioxidant, Anti-Aging, Herbal Formulations, Adaptogenic.

INTRODUCTION

Asparagus racemosus, commonly known as Shatavari, is a plant belonging to the Asparagaceae family. It is native to India and is widely used in Ayurvedic medicine for its medicinal properties. Shatavari has been used for centuries in traditional medicine, especially for its health benefits related to the reproductive system, digestive health, and overall well-being. The name "Shatavari" translates to "the one who has a hundred husbands," signifying its reputation as a tonic for women. This thesis aims to explore recent research and new trends concerning the medicinal uses of Asparagus racemosus, focusing on its pharmacological properties, therapeutic uses, and the new trends in its applications [1].

Botanical Description and Composition

Asparagus racemosus is a woody, climbing shrub with thin, wiry branches and small white or pale yellow flowers. Its medicinal properties lie mainly in the root, which contains several bioactive compounds, including saponins, alkaloids, flavonoids, glycosides, and polysaccharides. The primary active constituents that contribute to its medicinal benefits are asparaguses, which are believed to have antioxidant, anti-inflammatory, and immune-boosting properties [2, 3].

Common Name

Hindi - Shatavari

English - Indian Asparagus, Hundred Roots, Asparagus roots

Latin - Asparagus racemosus

Family: Asparagaceae

Sanskrit - Shatamuli

Marathi- Stimuli

Gujarati - Semukha

Bengali - Satmuli

Pharsi - Gujardasti

Arabi - Sakakulmisari

Chinese - Tian men dong

Shatavari Plant

Shatavari, Asparagus racemosus, is a climbing plant which grows in low jungles areas throughout India. Shatavari plant leaves resembling pine needles, and grows to up to 2 meters in height. It is in flower from July to August. The flowers are hermaphrodite (have both male and female organs) and are pollinated by Bees. Its fruits are small, round and turn red. The fruits contain 2 or 3 seeds [4].

Chemical Constituents

The chemical ingredients in the Shatavari plant, including steroidal saponins, isoflavones, asparagine (an alkaloid substance similar to aspirin), and polysaccharides, make this plant a natural chemical source. The following active constituents are present is Shatavari plant:

Steroidal saponins, known as shatavarins I-IV. Shatavarin I is the major glycoside with 3 glucose and rhamnose moieties attached to sarsasapogenin Isoflavones including 8-methoxy-5, 6, 4'-trihydroxyisoflavone 7-O-beta-D-glucopyranoside. Asparagamine, a polycyclic alkaloid Racemosol, a cyclic hydrocarbon (9, 10-dihydrophenanthrene), Polysaccharides, mucilage [5].

Figure 1: Shatavari Plant

Figure 1: Shatavari Plant roots

Cultivation

Soils: The plant prefers light (sandy), medium (loamy) and heavy (clay) soils and requires well-drained soil. Black, well drained and fertile soil is good for cultivation. But can be cultivated in loose and medium black soil.

Climate- crop responses well to tropical and hot climate.

Irrigation: The tamarind is adapted to semiarid regions of the tropics and can withstand drought conditions quite well. They require minimum irrigation so avoid over-watering.

Fertilization: one ploughing, three harrowings and then apply 20-25 tonns of farm yard manure.

Harvest: raised beds -1x3 m in the month of May or June.

Seed –one kg for one hectare area [].

Apply 50 gram urea in the bed after 20-25 days.

Seedlings become ready within 6-8 weeks for transplantation in the main field.

Transplanting- 1) Size of pit-45x45x45

Spacing-row to row-1.5m and plant to plant-1.0m

Fill the pits with 20-30 gram lindane or carbaryl and 5 kgs of FYM

Time of transplanting – july-august

Provide the crop with 50 Gms of 15:5:15(suphala) per plant when it starts with good growth.

Carry out timely weeding operations. Generally shatavari crop does not affect with pest and diseases.

Harvesting- first harvesting – 1.5-2 years after transplanting, which continues for 10-15 years.

Male and female plants must be grown if seed is required [].

Pharmacological Properties of Shatavari

Anti-inflammatory and Immunomodulatory Effects

Recent research has highlighted Shatavari's significant anti-inflammatory and immunomodulatory properties. Studies have shown that the root extract of Asparagus racemosus can inhibit the release of pro-inflammatory cytokines such as TNF-α, IL-1β, and IL-6, which play key roles in inflammation and immune responses. These properties suggest its potential in the treatment of inflammatory diseases such as arthritis and autoimmune disorders.

A study published in the Journal of Ethnopharmacology examined the effects of Shatavari extract on the immune system and found that it could enhance the production of white blood cells, contributing to improved immune function. This makes it a valuable herbal remedy for boosting immunity, particularly in individuals with weakened immune systems [8].

Antioxidant Activity

Shatavari has demonstrated potent antioxidant activity in recent studies. The antioxidant properties of Shatavari are attributed to the presence of flavonoids, saponins, and other polyphenolic compounds. These compounds help neutralize free radicals, thereby protecting the body from oxidative stress and cellular damage. Oxidative stress is a major contributor to aging and several chronic diseases, including cardiovascular disease, diabetes, and neurodegenerative disorders. Shatavari's antioxidant activity has sparked interest in its potential role as an adjunct therapy in the prevention and management of these conditions [9].

Adaptogenic Effects

Shatavari is classified as an adaptogen, meaning it helps the body cope with stress and maintain balance during challenging situations. Recent studies have shown that the root of Asparagus racemosus can regulate the hypothalamic-pituitary-adrenal (HPA) axis, which is responsible for the body's response to stress. This adaptogenic property makes Shatavari a promising herb for managing stress-related disorders, anxiety, and fatigue.

A study in the Journal of Ethnopharmacology found that Shatavari extract significantly reduced stress-induced damage to the adrenal glands and improved the overall stress response. This suggests its

potential as a natural remedy for stress management and anxiety disorders.

New Trends and Applications of Shatavari

Cosmetic and Skin Health

In recent years, Shatavari has gained popularity in the cosmetic industry for its anti-aging and skin-rejuvenating properties. The antioxidant and anti-inflammatory effects of Shatavari make it a valuable ingredient in skincare formulations. Recent studies have shown that Shatavari extracts can improve skin elasticity, reduce wrinkles, and promote a youthful appearance by protecting the skin from oxidative damage [10].

Shatavari in Herbal Formulations

Shatavari is increasingly being incorporated into combination herbal formulations. It is often combined with other adaptogens, such as Ashwagandha (Withania somnifera), to enhance its stress-relieving and overall health-boosting effects. New trends in Ayurveda and modern herbal medicine have seen Shatavari being used in various forms, including powders, capsules, teas, and tinctures, making it accessible for a wider range of users [11].

Clinical Research and Standardization

With the growing interest in Shatavari, there has been an increased focus on clinical research to establish standardized dosages, efficacy, and safety profiles. Clinical trials are underway to better understand its therapeutic potential in various health conditions, including reproductive health, gastrointestinal disorders, and neurodegenerative diseases. The standardization of Shatavari extracts, ensuring consistency in active ingredients, will help increase its acceptance in mainstream medicine.

Gastrointestinal Health

Shatavari has historically been used in Ayurveda to treat digestive issues, and contemporary research continues to validate and expand upon these benefits. Modern studies are exploring the mechanisms through which Shatavari supports gastrointestinal health, with particular focus on its gastroprotective, anti-inflammatory, and soothing effects on the digestive system. For example, Shatavari has been shown to increase the production of gastric mucus, which provides a protective barrier against stomach acid and helps prevent ulcers and gastritis (Prakash & Patil, 2020).

Anti-Aging and Skin Health

In recent years, Shatavari has gained attention for its anti-aging properties, which are attributed to its antioxidant content and ability to combat oxidative stress. Oxidative stress, caused by free radicals, is a major contributor to the aging process and the development of age-related diseases. Shatavari is rich in flavonoids and saponins, which have potent antioxidant properties that protect the body from the damaging effects of free radicals [12].

In Men's Health

While Shatavari is primarily known for its benefits in women's health, recent studies suggest that it may also have a positive impact on men's reproductive health and vitality. Traditionally, it has been used to enhance stamina and physical strength, and emerging research is beginning to explore its role in male fertility. Shatavari has been found to have a positive effect on testosterone levels, sperm count, motility, and morphology, making it a potential natural remedy for male infertility. A study by Sharma et al. (2021) indicated that Shatavari supplementation improved semen quality in men with low fertility, making it an important herb in the field of male reproductive health [13].

CONCLUSION

Asparagus racemosus (Shatavari) is a versatile and valuable herb with a wide range of medicinal applications. Recent research has provided significant insights into its pharmacological properties, including its anti-inflammatory, antioxidant, and adaptogenic effects. Shatavari's benefits extend to various therapeutic areas, including women's health, digestive health, fertility, and kidney function. With new trends in its use in cosmetics and clinical formulations, Shatavari is emerging as a promising natural remedy in both traditional and modern medicine. As ongoing research continues to uncover its full potential, Shatavari is likely to play an even more significant role in promoting overall health and wellness in the years to come.

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