

A REVIEW ON ASPARAGUS RACEMOSUS FOR ANTI-OBESITY**M. K. Umamaheswari*¹, Jaslin Edward¹ and A. S William Arputha Sundar¹**

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Trivandrum, India.**ABSTRACT**

Asparagus plants may take 2 to 3 years to truly get started and produce, so patience is needed! But then again, the plant can be productive for up to 25 years, so we think it's worth the wait. Asparagus has male and female plants, with the female plants producing berries. Regions with cool winters are best for this cool-season crop, which is planted in early spring. Obesity is the most prevalent health problem affecting all age groups, and leads to many complications in the form of chronic heart disease. A systematic review about safety and efficacy of herbal medicines in the management of obesity in human was carried out by searching bibliographic data bases. In this update, the search terms

were "obesity" and ("herbal medicine" or "plant", "plant medicinal" or "medicine traditional") without narrowing or limiting search items. Publications with available abstracts were reviewed only.

KEYWORDS: Asparagus Racemosus, Shatavarin, Obesity.**INTRODUCTION**

Asparagus racemosus is a species of asparagus common throughout Nepal, Sri Lanka, India and the Himalayas. It grows 1–2 m tall and prefers to take root in gravelly, rocky soils high up in piedmont plains, at 1,300–1,400 m elevation. It was botanically described in 1799. Because of its multiple uses, the demand for *Asparagus racemosus* is constantly on the rise. Because of destructive harvesting, combined with habitat destruction, and deforestation, the plant is now considered "endangered" in its natural habitat. *Asparagus racemosus* (Asparagaceae) is an important medicinal plant of tropical and subtropical India. Its medicinal usage has been reported in the Indian and British Pharmacopoeias and in traditional systems of medicine such as Ayurveda, Unani and Siddha. *Asparagus racemosus* has been described to use as antioxidant, immune stimulant, anti-dyspepsia and anti-tussive

effects. It is also useful in treatment of epilepsy, kidney disorders, chronic fevers, excessive heat, stomach ulcers and liver cancer, increases milk secretion in nursing mothers and regulates sexual behaviors. The major active constituents of *Asparagus racemosus* are steroidal saponins. Isoflavones, asparagamine, racemosol, polysaccharides, mucilage, vitamins A, B1, B2, C, E, Mg, P, Ca, Fe, and folic acid present in roots. It is also useful in treatment of epilepsy, kidney disorders, chronic fevers, excessive heat, stomach ulcers and liver cancer, increases milk secretion in nursing mothers and regulates sexual behaviors. Due to multiple uses demand of *Asparagus racemosus* on rise so plant became endangered.

Obesity is a complex health issue to address, it is a serious and chronic disease that can have a negative effect on many systems in your body. Overweight and obesity may increase the risk of many health problems, including diabetes, heart disease, osteoarthritis and certain cancers. Obesity is increasing at an alarming rate throughout the world. Today it is estimated that there are more than 300 million obese people world-wide. Obesity is regarded as a disorder of lipid metabolism and the enzymes involved in this process could be targeted selectively for the development of antiobesity drugs. However, most of the anti-obesity drugs that were approved and marketed have now been withdrawn due to serious adverse effects. The naturopathic treatment for obesity has been explored extensively since ancient times and gaining momentum in the present scenario. Traditional medicinal plants and their active phytoconstituents have been used for the treatment of obesity and their associated secondary complications.

Plant profile

Scientific Name: *Asparagus racemosus*.

Family: Asparagaceae.

Order: Asparagales.

Higher classification: *Asparagus*.

Rank: Species.

Kingdom: Plantae.



Language/ Region	Vernacular name
Sanskrit	Satavari
Hindi	Satavari, Satawar or Satmuli
Assamese	Satomul
Bengali	Shatamuli
Marathi	Shatavari or Shatmuli
Gujarati	Satawari
Oriya	Vari
Telugu	Toala-gaddalu or Pilli-gaddalu
Tamil	Shimaishadavari or Thanner Vittal Kizhangu or Inli-chedi
Malayalam	Chatavali
Kannada	Majjigegadde or Aheruballi
Kumaoni	Kairuwa
Madhya Pradesh	Narbodh or Satmooli
Rajasthani	Norkanto or Satawar
Manipuri	Nunggarei
Urdu	Satawar
Nepali	Kurilo

Flower of asparagus

Colour: white

Shape: spikes



Root of asparagus

Colour: white tuberous

Shape: spindle

Cultivation

Asparagus can take three growing seasons to harvest, though you may be able to lightly harvest during the second year. In the first year, just let the asparagus go vegetative to give the crown a chance to get well established. Next spring, remove the old fern growth from the

previous year, and keep an eye open for the new spears beginning to emerge. Harvest spears at approximately 8 inches tall, cutting the spears off with a knife or scissors at the soil line. Check your plant every other day for harvest-ready spears.

Spears grow quickly and may become too woody before you know it! Stop harvesting spears when the diameter of the spears decreases to the size of a pencil. At that point, it's time to let them grow and gain strength for next spring. Once an asparagus spear starts to open and have foliage, it's too tough for eating. If you have young plants, the season may last 2 to 3 weeks. However, established plants produce longer—up to 8 weeks. After harvest, allow the ferns to grow; this replenishes the nutrients for next year's spear production. Always leave at least one spear. Cut back asparagus.

After the foliage has died back and turned brown or yellow. This is usually in the fall after the first frost. Cut back to about two inches from the ground. Asparagus can take three growing seasons to harvest, though you may be able to lightly harvest during the second year. In the first year, just let the asparagus go vegetative to give the crown a chance to get well established. Next spring, remove the old fern growth from the previous year, and keep an eye open for the new spears beginning to emerge.

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MATERIALS AND METHODS

Extraction of Plant material

The roots of *Asparagus racemosus* were subjected for extraction using static extractor. The powdered root was refluxed with fresh methanol (1:3 drug to solvent ratio) for one and half hour at temperature not exceeding 650 C and the extract was strained through muslin cloth to obtain the 1st extract. The marc was again subjected for second time extraction and the

extract obtained was strained through muslin cloth to yield 2nd extract. The same procedure was followed for third wash to obtain the 3rd extract. The 1st, 2nd, 3rd extracts were combined together and concentrated to obtain a thick paste.

Phytochemical Evaluation

Determination of total phenolics

Total phenolics contents were assayed using the Folin-Ciocalteu reagent and gallic acid as a standard following Singleton's method. Folin-Ciocalteu reagent (0.5 mL) was added to a solution containing 1 mL of extract, with a known concentration (1 mg/mL) and 3 mL of distilled water. The solution was mixed and after 3 min, 0.5 mL of 2% sodium carbonate solution was added. The mixture was left to incubate for 90 min, and the absorbance was measured at 760 nm. The total phenolics content was calculated by a standard gallic acid graph, and the results expressed in mg of gallic acid equivalents per g (mg GAE/g) of dry weight of extract.

Determination of total flavonoids

The total flavonoids contents in the various extracts were determined according to using a method based on the formation of a complex flavonoid-aluminium, having the maximum absorbance at 430 nm. Quercetine was used to make the calibration curve. About 1 mL of diluted sample was mixed with 1 mL of 2% aluminium trichloride (AlCl₃) methanol solution. After incubation at room temperature for 15 min, the absorbance of the reaction mixture was measured at 430 nm with a Shimadzu UVmin-1240 UV-Vis spectrophotometer and the total flavonoid content was expressed in mg quercetine equivalent (QE) per g of extract.

Evaluation of anti obesity

Induction of Progesterone to Produce Obesity

Progesterone is the obesity control used to induce obesity. The dose of obesity control is 10mg/kg of body weight. It was prepared by dissolving in arachis vial contents were dissolved in arachis oil and a dose of 10 mg/kg was administered subcutaneously in the dorsal neck region to mice for 28 days. The test drugs were injected 30 min before progesterone administration. 15 Preparation of the Test Drug The extract and standard Orlistat were soluble in distilled water. For progesterone, arachis oil was used as a vehicle and diluents for appropriate doses. All drugs were given at a dose of 0.4 ml/100 g body weight. All the drug concentrations were prepared freshly just before administration. All the test drugs, including the standard were given by oral gavages by p.o. route.

α -Amylase inhibition assay by CNPG3 method

The *in vitro* α -amylase inhibition activity of all extracts was determined based on the spectrophotometric assay using acarbose. The plant extract was dissolved in DMSO to give concentrations from 50, 100 and 200 $\mu\text{g}/\text{mL}$. The enzyme α -amylase solution was prepared by mixing of α -amylase in 100 mL of 40 mmol/L phosphate buffer, pH 6.9. Positive control, acarbose was obtained by dissolving in phosphate buffer. The assays were conducted by mixing 80 μL of plant extract, 20 μL of α -amylase solution and 1 mL of CNPG3. The mixture was incubated at 37°C for 5 min. The absorbance was measured at 405 nm spectrophotometrically (Jenway 6405 UV/Visible, Great Britain). Similarly, a control reaction was carried out without the plant extract/acarbose. Percentage inhibition (PI) was calculated by the expression

$$\text{PI} = \left[\frac{\text{Absorbance}_{\text{Control}} - \text{Absorbance}_{\text{Test}}}{\text{Absorbance}_{\text{Control}}} \right] \times 100$$

CONCLUSION

Shatavari or Satmuli is a very important medicinal plant, which is used, in many (allopathically) incurable diseases in Ayurveda and also in Himalayan traditional medicine system. Traditionally this plant is used as a reproductive tonic. Herbal medicine is a triumph of popular therapeutic diversity. Plants, above all other agents, have been used for medicine from time immemorial because they have fitted the immediate personal need, are easily accessible and inexpensive. In the recent past there has been a tremendous increase in use of plant based health products in developing as well as developed countries resulting in an exponential growth of herbal products globally. In view of this, in the present study, attempts are made to evaluate the anti obesity of four medicinal plants namely *Asparagus racemosus* through *in vitro* experiments. Further in depth studies should be carried out to potentiate the use of these plants individually as antiobese agent formulation of effective drugs.

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