

# Pharmacological Review on *Asperagus racemosus*

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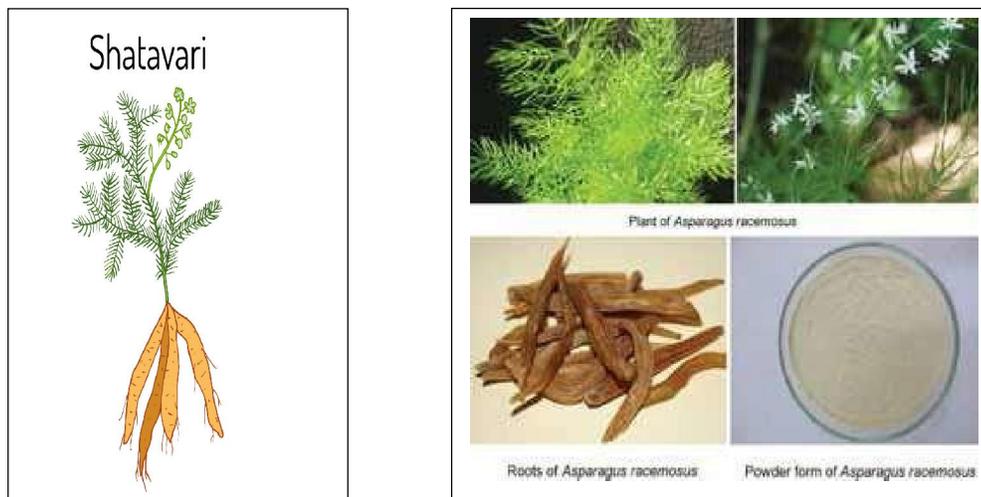
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**Abstract:** In this review article we are focusing on *Asperagus racemosus*. *Asperagus racemosus* commonly known as *Satamuli*, *satavari*, *satawar*. *Asperagus racemosus* also known as *shatavari* used as medicinal plant. The Ayurvedic plant *Asperagus racemosus* wild belongs to family *Liliaceae*. It shows medicinal therapeutic properties such as antibacterial, anticancer, antioxidant, antidiarrhoea, antiinflammatory, diuretic, antitubercular galactagogue, antiulcer. By the various review it is seems that the whole plant also used for evaluating various pharmacological activity. In this review we are generally discussed about the pharmacological activity reported by using various *in-vitro* and *in-vivo* models.

**Keywords:** *Asperagus Racemosus*, *shatavari*, pharmacological activity, *In-vivo*, *In-vitro* Models

## I. INTRODUCTION

*Asperagus racemosus* belong to family *Liliaceae*. Commonly known as *shatavari*. It is mostly found tropical & subtropical regions. In female, this plant is also known as Female Rejuvenative, useful in excessive bleeding during menstruation of weakness of the uterus. *Asperagus racemosus* is a woody Climber growing to 1-2m in height. *Asperagus racemosus* in every field use such as cosmetic, human disease treatment, antitussive action, hormonal activity etc.



### 1.1 Scientific Classification

<b>Kingdom</b>	Plantae
<b>Clade</b>	Angiosperms
<b>Clade</b>	Monocots
<b>Order</b>	Asparagales
<b>Family</b>	Asparagaceae
<b>Sub family</b>	Asparagoideae
<b>Genus</b>	Asparagus
<b>Species</b>	Aracemos

## 1.2 Description

### A. Macroscopic Characters

Shatavari Roots are tuberous and grow in the form of Compact bunch. Their Roots having length 10-30 cm and thickness 0.1-0.5 cm. stems are woody having brown colour and showing presence of small Spines. Its flowers are white of aromatic in nature. Fruits are round in shape or maturity Colour Changes from green to red like red berries.

### B. Microscopic Characters

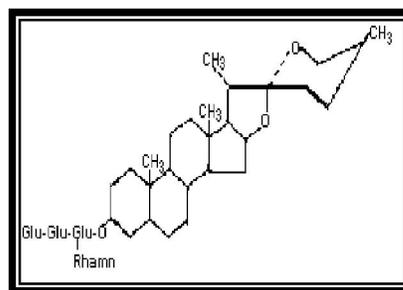
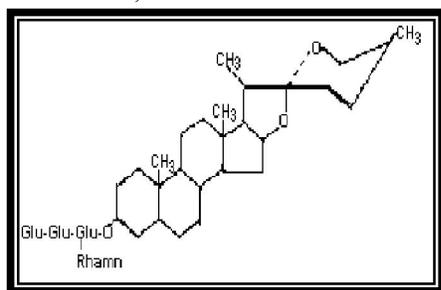
#### 1) Anatomical Structure

TS. of plant composed of the Peripherous cell layers which are composed of small thin cell walls and are elongated to form the root cortex.

Root:- The root tuber in its powdered state is morphologically pale yellow colour, odourless and having sweet taste. It consists of parenchyma cells.

### B. Chemical Constituents

This plant contains vitamins A, B1, B2, C, E, Mg, P, C, Fe and folic acid. Other primary chemical constituents of Asparagus are essential oil, asparagine, arginine, tyrosine, flavonoids (kaempferol, quercetin and rutin), resin & tannin. It consists of 29 steroidal saponins Shalavann I-IV, with shatavarin IV major glycoside being present in root. The structure shatavarin IV consists of two molecules of Asparagus rhamnose along with 1 molecule of glucose R is mainly found in leaf, fruits and roots.



### C. Pharmacological Activity

#### Anti-oxidant Activity

Anti-oxidant play a vital role in scavenging the free radicals produced in the body. Shatavari roots extract in protecting the gamma radiation induced damage in liver. It also inhibits protein oxidation. <sup>[1]</sup>

#### Antibacterial Activity

Plant extract to inhibit the growth of bacterial pathogens. Both gram positive and gram negative bacteria were sensitive to extract. The methanolic root extract shown potent in-vitro antibacterial activity against staphylococcus aureus, E-coli, Bacillus subtilis, salmonella typhi, Shigella as compared to drug chloramphenicol. <sup>[2]</sup>

#### Antiulcer Activity

It shows inhibitory effect on release of gastric acid & prevents gastric mucosa damage by compared with drug. The protective activity of extract was due to increase in mucosal defensive factors like mucus secretion, cellular mucus, life span of cells and anti-oxidant effect. <sup>[3]</sup>

#### Hepatoprotective Activity

Hepatoprotective activity was inhibited production of free radicals, acting as a scavenger & reducing free radical generation via inhibition of hepatic CYP 2E activity. <sup>[4]</sup>

#### **Diuretic Activity**

Study was carried out using an Aq extract of the roots utilizing three dose vials 800mg/kg, 1600 mg/kg and 3200 mg/kg for its diuretic activity.[5]

#### **Anticancer Activity**

The root extract was shown to have protective effect in mammary cell Carcinoma In *Asperagus racemosus*. Steroidal component shows apoptotic activity and inferred to have capacity to tumor cell death.[6]

#### **Antitussive Effects**

It is used in treatment of Cough & in minor upper respiratory tract infection, exhibit the antitussive properties. This extract can be used against opium based drugs, since there are no side effects like nausea, sweating, tiredness which can be observed by use of codeine phosphate associated drugs.[7]

#### **Cardio Protective Role**

Development of cardiovascular diseases and atherosclerosis is mainly due to the increase in the serum cholesterol especially LDL cholesterol. The release of free radicals has been found to play a key role in the development of coronary artery disease. Studies exhibit a significant hypocholesterolemic role of *A. racemosus* extract. [8,9]

#### **Anti-plasmodial Activity:**

The ethyl acetate extract of the roots of *A. racemosus* has been tested for anti-plasmodial activity. The extract with yield value of 7.9% per 100g have shown dose dependent inhibition of chloroquine resistant strain of *Plasmodium falciparum* (3D7) with an IC<sub>50</sub> value of 29µg/mL.[10]

#### **Antiepileptic Effect**

The anticonvulsant activity was evaluated using different extracts on seizures. The methanolic extract has shown significant anticonvulsant effect which was anticipated by the observation of a decrease in the duration of the hind limb extension, clonus and also the duration of stupor phase. There was a prolonged onset of the tonic clonic seizure induced by pentylenetetrazol in the groups treated with methanolic and aqueous extracts and mechanism behind the activity was GABAergic. [11]

#### **Anti-HIV Activity:**

*Racemosus* is also known to show immunomodulatory activity. Steroidal saponin glycosides (19-24) have been reported from these extracts. Compound 19 isolated from the ethanolic extract exhibited the highest anti-HIV activity as compared to other saponin glycosides. [12]

#### **Galactagogue Effect**

In Ayurveda, the galactagogue activity of root extract, increased milk secretion during lactation. In lactating mothers the lactational deficiency was proved by many researchers in their studies. In root extract, due to presence of prolactin, increased weight of mammary glands and uterine weight in post-partum and oestrogenprimed rats.[13]

#### **Antidiarrhoeal Activity**

The methanolic and aqueous root extract shown considerable antidiarrhoeal activity against castor oil-induced diarrhoea and PGE<sub>2</sub> induced enterpooling at a dose of 200mg/kg in rats.[14]

#### **Hypoglycemic Activity**

Ethanolic root extracts of *A. racemosus* exhibited a significant hypoglycemic activity. Studies with animal models prove a significant increase in the levels of insulin release. The release of insulin further increased with a subsequent increase in the concentration of glucose in blood.[15]

## II. CONCLUSION

At the end of satisfactory review it was found that the *Asparagus racemosus* had numerous pharmacological activity. By using various in-vivo and in-vitro model it was seems that the phytochemical constituents exhibits pharmacological activity. This plant is most important & shows Various therapeutic properties. The different parts of plant contains Various Chemical Constituents Shows activity against several disease. A racemosus extracts has proved to possess various pharmacological properties & potent therapeutic agent A safety profile analysis showed that the *Asperagus racemosus* is safe in therapeutic doses and can be used during pregnancy with a Caution.

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