



## MONOGRAPH OF SHATAVARI ROOTS

### ASPARAGUS RACEMOSUS WILLD

#### INTRODUCTION :

**Botanical Name** : *Asparagus racemosus* Willd.

**Family** : Asparagaceae.

**Common Name** : Shatavari

**Part Used** : Roots



**Fig : Shatavari Plant**

#### HISTORY :

The drug is mentioned since the time of puranas. There is mentioning in Agnipurana regarding the Rakshogahna property and used in Homas (rituals). In the Samhitha period a detailed description of the drug in terms of its therapeutic properties and its extensive use in the treatment of Sthreeroga (gynaecology), Vrana (surgical wounds), Rakthapitta (haemorrhage) Mutrakrcha (urinary disorders), Vajeekarana(aphrodisiac), Rasayana(immune stimulant) are available.



### **GEOGRAPHICAL SOURCE :**

The plant is indigenous to tropical India and quite commonly seen as an extensively branched. The plant is a climber. Root stock is stout and short and bears numerous considerably long, fusiform succulent tuberous roots, 30cm long, smooth tapering at both ends, succulent and tuberous. Stem have strong straight, recurved spines at the nodes. Leaves are reduced to minute chaffy scales.

### **PROPAGATION AND CULTIVATION :**

The plants is grown on sandy well drained soil. They can be propagated by seeds and divisions of rhizomatous disc. Seedling should be planted preferably on ridges, 60 in to 60 cm apart. Harvesting is recommended 40 months after plantation and continues for 10-15 years. Shatavari can also be propagated by shoot tip culture on MS medium supplemented with BAP (0.5mg/l).

### **DESCRIPTION :**

#### **MORPHOLOGY :**

- Size and Shape : Roots are brown in colour, tuberous, elongated, tapering at both the ends swollen in the middle, up to 30-100 cm long.
- The fresh roots are fleshy and white in colour, contains epidermal hairs ;
- Taste is mucilaginous,
- Fracture is brittle.



**Fig. Shatavari roots**



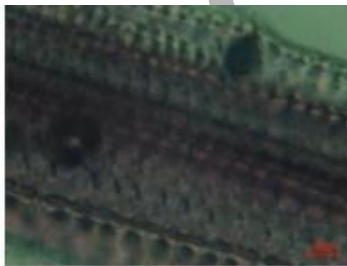
## MICROSCOPY

Transverse section of the root is circular or elliptical,

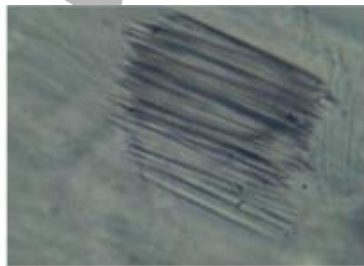
- **Epidermis** : Outer layer of piliferous cells, ruptured at places with unicellular root hairs
- **Cortex** : The outer cortex consists of 6 or 7 layers of polygonal, thick walled, lignified cells
- **Inner cortex** : comprises of 20 to 23 layers of oval to polygonal, thin-walled cells. Stone cells, and raphides of calcium oxalate is present in this region. 2 or 3 layers of stone cells are seen encircling the endodermis
- **Endodermis** : Single layer of thin-walled parenchymatous cells.
- **Pericycle** : It is present below endodermis as a single layer of compactly arranged cell.
- **Vascular bundles** : Xylem -consist of vessels, tracheids and parenchyma. Ex arch and radial in position. Phloem as patches seen alternating to the xylem vessels. Phloem is non lignified and appear like bunch of grapes
- **Pith** : composed of circular to oval parenchymatous cells.

## POWDER CHARACTERISTICS:

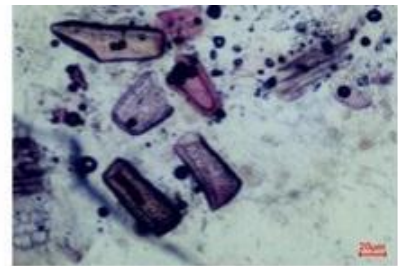
- Powder revealed presence of acicular crystals, raphides of calcium crystals, pitted vessels, tracheids



Annular pitted vessel



Raphides



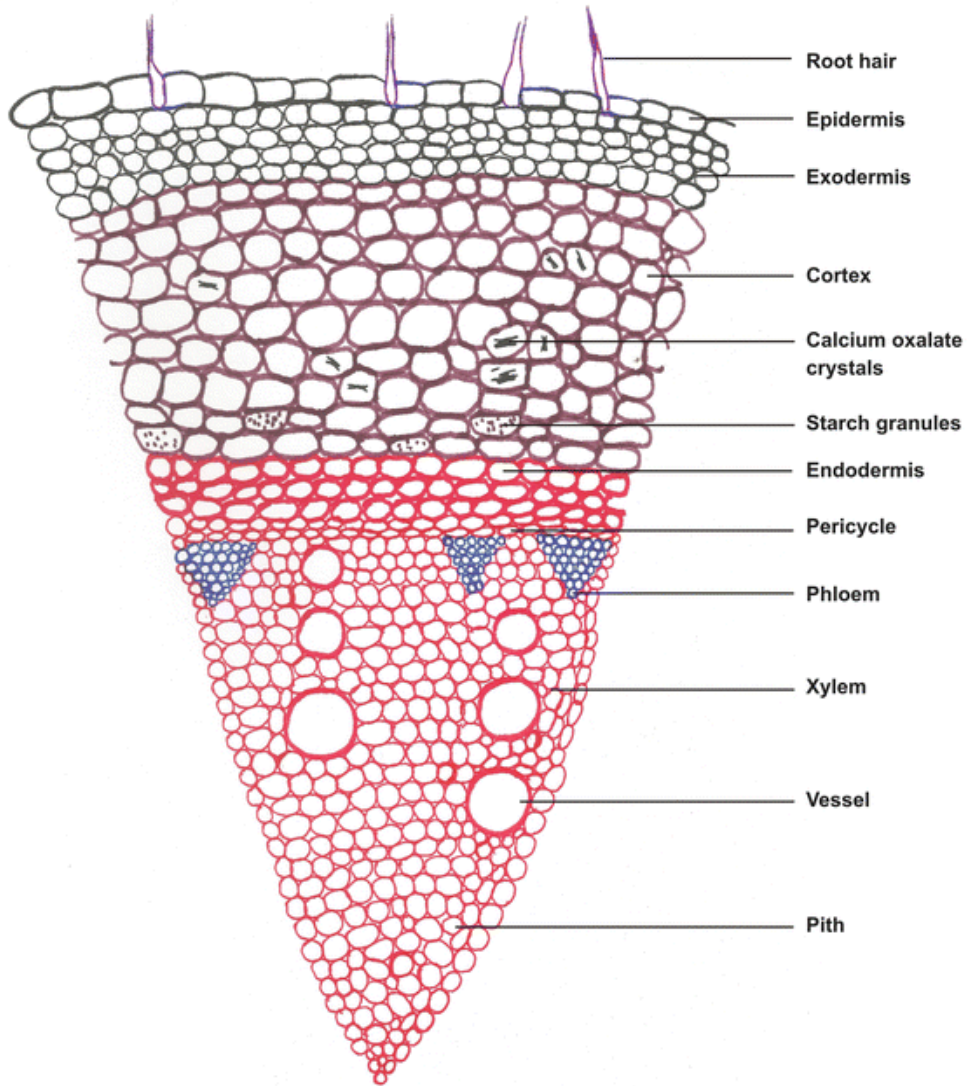
Parenchymatous cells with stone cells



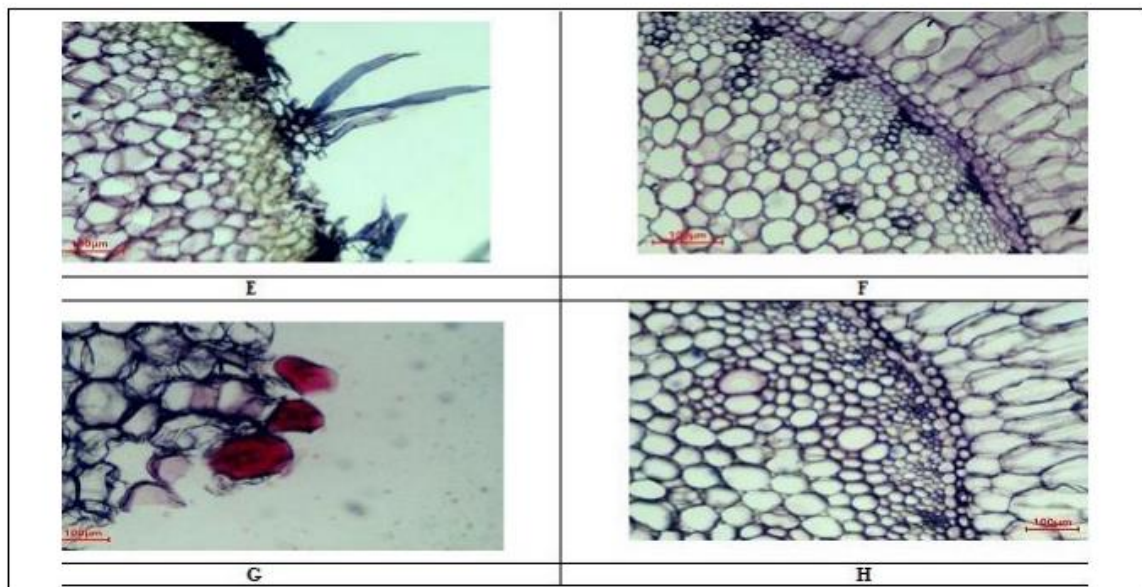
Pitted tracheid



Stone cell



T. S. of Asparagus root

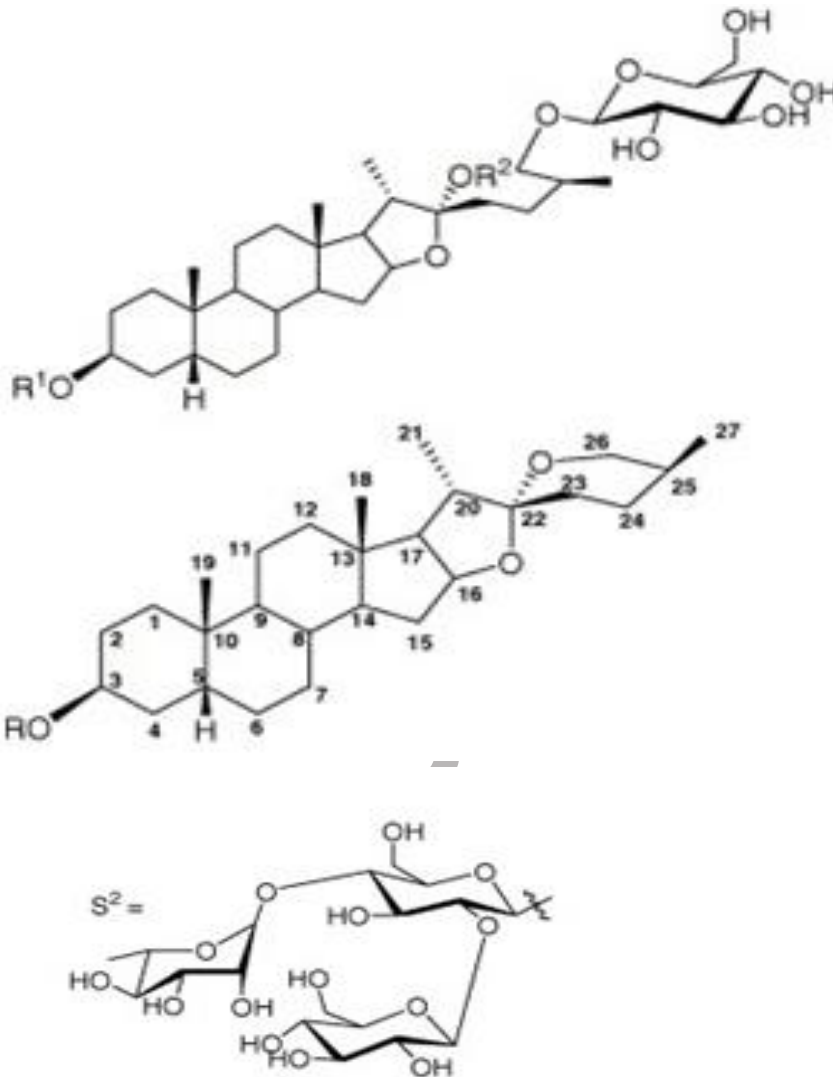




## CHEMICAL CONSTITUENTS

The Shatavari plant contains a large group of

- Isoflavones : Genistein and daidzein, kaempferol, quercetin, and rutin
- Steroidal saponins. - Shatavarin I, Shatavarin IV.
- Others phytoconstituents are Asparagine, 9, 10- dihydrophenanthrene
- Tanninsteroidal glycosides - Asparagosides
- Sterols : Beta-Sitosterol and Stigmaterol
- Vitamins A, B1, B2, C, E, Mg, P, Ca, Fe, and folic acid.



$R^1 = S^2 =$ ,  $R^2 = H$  : Shatavarin I

$R = S^2$  : Shatavarin IV

**Aglycone = Sarsapogenin**

**Glycone = Glucose [(4-1)rahamnose](2-1) Glucose**



### THERAPEUTIC ACTIVITY

- **Phytoestrogenic activity** : Has lactogenic effect. Very effective in enhancing milk secretion during lactation. EveCare was found to be effective for in patients suffering from dysmenorrhea.
- **Neurodegenerative potential** : 'Mentat', is a psychotropic preparation effective in the treatment of alcohol abstinence induced withdrawal symptoms such as tremors, convulsions, hallucinations and anxiety in ethanol administered rats.
- **Adaptogenic activity** : 'Rasayana' is a group of plant drugs which besides improving defence mechanisms of the body also promote physical and mental health as well as provide strength and long life. Siotone' is herbal formulation which has significant adaptogenic activity and it reverse chronic stress-induced biochemical, physiological and behavioural perturbations.[59] 'EuMil' also like 'Siotone', exhibited significant adaptogenic and antistress activity.
- Antiulcerogenic agent. '
- Cholesterol Lowering property
- Anti-inflammatory activity
- Antibacterial activity

### MARKETED PREPARATION :

- Shatavari kalpa
- Shatavaryadi ghrita
- Garbhachintamani
- Shatavari panaka
- Brihatashwagandha ghrita

### SUBSTITUTES AND ADULTERANTS :

- Roots of *Asparagus sarmentosus* Linn.,
- *Asparagus curillus* Ham.,
- *Asparagus filicinus* Ham.



**REFERENCES:**

- Mishra, B. P., & Verma, N. K. (2017). *Asparagus racemosus*: chemical constituents and pharmacological activities- a review European Journal of Biomedical AND Pharmaceutical sciences. *European Journal of Biomedical*, 4(6), 207-213.
- Sharma, P. C., Yelne, M. B., & Dennis, T. J. (2005). *Database on medicinal plants used in Ayurveda* (Vol. 3, pp. 130-131). New Delhi: CCRAS.
- Joshi, R. K. (2016). *Asparagus racemosus* (Shatawari), phytoconstituents and medicinal importance, future source of economy by cultivation in Uttrakhand: A review. *Inter. J. Herb. Med*, 4(4), 18-21.

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