

## Plant Profile: *Abrus precatorius* L.

**Scientific name** *Abrus precatorius* L.

**Family** Leguminosae

**Common names:** In India it is known by several names like Gunj (Marathi); Ganchi, Gunchi, Rati (Hindi); Chunhali, Kunch (Bengali); Chanothi, Gunja(Gujarati); Ganji, Gul-Ganju, Guluganji, Madhuka(Karnataka); Kunni, Guruginia, Guruvenda (Telugu); Kunnikuru (Malayalam); Chanoti, Gunchi, Gunja (Marathi); Gundumani, Kuntumani (Tamil); Gunja, Runji (Oriya) Liluwani, Raturmani (Assam); Labrigunchi, Ratak(Punjab).

**Habitat** It is native to India widespread in tropical and subtropical areas, at altitudes up to 1200 m on the outer Himalayas of India

### Plant Description

It is a beautiful, much-branched, slender, perennial, deciduous, woody, prickly twining or climbing herb. Stem cylindrical, wrinkled, bark smooth-textured, brown. The leaves are pinnate and glabrous, with many leaflets (12 or more) arranged in pairs. The leaflets are oblong, measuring 2.5-cm long and 1.5-cm wide. Flowers are numerous and appear in the leaf axils along the stems, shorter than leaves, fascicled on the swollen nodes and occur in clusters 1 to 3 inches long, usually red to purple, or occasionally white. The plant produces stout and short brownish pods, which curl back on opening to reveal pendulous red and black seeds, 4 to 6 peas in a pod. The fruit is a legume (pea shaped pod) about 3 cm long containing hard ovoid seeds about 1 cm long.

### Chemical Composition:

*Abrus precatorius* is rich in various chemical constituents such as abrasine, abrol, precol and pre-casine from the roots. The active principle in the seeds of *A. precatorius* is abrin. Seeds are rich in several essential amino acids like alanine, serine, choline, valine, and methyl ester. The seeds contain the protein toxin, abrin which is deadly when ingested even at a small dose. It was reported that as minute as 0.00015% of toxin per body can cause fatality in humans. They contain poisonous protein, a fat-splitting enzyme, aglucosideabruassic acid, haemagglutinin, albuminous substance named abrin and a quantity of ureas.

**Antimicrobial Activity:** Antimicrobial activity of divergent parts of *Abrus precatorius* like roots, leaves and seeds were studied against some of the microorganism. Root extract of *Abrus precatorius* against the Gram positive organism *Staphylococcus aureus* was found to be active. Root extracts possess good antibacterial potential particularly against *Staphylococcus aureus*.

**Anti-diabetic activity:** The anti-diabetic effect of chloroform–methanol extract of *A. precatorius* seed i.e. 50mg/kg was examined in alloxan diabetic rabbits. The percentage reduction of blood glucose after treatment with chloroform – methanol extract at different intervals shows that the chloroform – methanol extract of *Abrus precatorius* seed has anti-diabetic properties.

**Anti-fertility activity:** Testicular degeneration was characterized by reduced number of cells in the epithelium along with reduction in the number of sperm cells was noted when the aqueous extract of *Abrus precatorius* was administered to male rats for 18 days at doses of 400 mg, 800 mg and 1600 mg/kg body weight.

**Tumor inhibiting activity:** There is another finding reported about water extract of fresh seeds at a concentration of 2.0 µl/ml was inactive against mitogenic activity on human lymphocytes.

**Anti-allergic activity:** Abruquinones A, B, D and F showed strong anti-allergic effects. Inhibition of superoxide formation was less than 0.3 µg/ml from rat neutrophils and less than 1 µg/ml for histamine from mast cells. Polymyxin B-induced hind paw oedema was suppressed by abruquinone A, in normal as well in adrenalectomised mice.

**Anti-inflammatory activity:** The anti-inflammatory activity of *Abrus precatorius* extract was investigated on inflammation induced by croton oil on rat ear model.

**Immunomodulating activity:** The immunomodulating activity was done by various researchers and one of the activities reported the effect of abrin on the cellular immune responses in normal and tumor-bearing animals.

Part of the plant	Type of Extract	Activity
Roots, seeds and leaves	Methanol and petroleum ether	Antibacterial Activity
Seeds	Petroleum ether	Anticancer activity
Seeds	chloroform – methanol extract	Anti diabetic effect
Seeds	ethanolic extract aqueous extract	Anti-fertility activity
Leaves	water extract	Anti-inflammatory activity
Seeds	hexane, chloroform, methanol and water	Anti-microbial activity
Seeds	ethanol	Anti-oxidant activity
Seeds	aqueous extract	Nephroprotective activity
Leaves	methanol	bronchodilator activity
Red & white seeds	Ethanol	Anti-arthritis activity
Leaves	ethyl acetate	Antiserotonergic Activity
Leaves	chloroform and ethanol	Cytotoxic property
Shoot	methanol	larvicidal activity

