

**A REVIEW STUDY OF GUNJA****<sup>1</sup>\*Dr. Lokesh Singh Bhati and <sup>2</sup>Dr. Ujwala hivale**

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**ABSTRACT**

Gunja (*Abrus precatorius*) known as Indian liquorice, this is most deadly poisonous plant. since ancient time Gunja have been used in Indian medicine system, In Ayurveda Gunja is consider as Sthavarvisha & Upavisha. It is common to tropical and subtropical countries. The prevalence of gunja poisoning in India is highest in the world. It's seeds contain active principle Abrin, Hemagglutinin, Abralin, Abric acid. Abrin is irritant and CNS depressant. Gunja is one Upavisha having rich therapeutic values, it can be used in treating many diseases with proper shodhan. Abrin is irritant and CNS depressant. In this manuscript the detail description about Gunja in

Ayurveda and contemporary texts has been compiled and critically evaluated.

**KEYWORDS:** Gunja, Abrin, Upavisha.

**INTRODUCTION**

Poison is a substance which if introduced in living body or brought in contact with any part of body will produce ill health or death.<sup>[1]</sup> In Ayurveda, Visha is defined as "Vishaadajananatvaat cha vishamityabhideeyate" drug which produce vishad (ill health).<sup>[2]</sup> Aacharya Susruta, Aacharya Charak mentioned the Gunja (*abrus precatorious*) as Sthavar visha (moola vish) and Upavisha. It is most deadly poisonous plant. It has been used in Indian medicine of system since ancient time. The seeds of *Abrus Precatorius* used for measure weight in older times, it was used to generally measure gold and precious stones. The seeds are often used in rosary beads, necklaces and folk jewellery.

**General Description-** Abrus precatorious is a severely invasive plant in warm temperate region. Abrus precatorious know as Indian liquorice, Rosary pea, Jonh bead, Jequirity Bean, crab's eye. It is slender, perennial climber that twines around trees. It is legume with long pinnate and leafleted reeves.<sup>[3]</sup> The leaves are like tamarind tree and sweet in the taste. In each legume there 3 to 6 seeds. The legumes are 2.5 to 3.5cm long containing red white and black coloured seeds. White coloured seeds are more toxic.<sup>[4]</sup> Toxic part – Seeds, root, leaves. The seed contain active principle Abrin, Abrine, Hemagglutinin, Abralin, Abric acid, Glycyrrhizin, N-methyl tryptophan. The abrin is soluble in sodium chloride and decomposes upon heating 85<sup>0</sup>MC. The Abrin is like to Viperine Snake venom.<sup>[5]</sup>

In Ayurveda Gunja weights about 1ratti (approx.125mg.) while modern toxicological texts Gunja weights approx. 105mg.

### **Rasapanchak**

Tiktakashaya ras, Laghuruksa guna, Ushan virya, katu vipaka, Kaphavatahar, Balya, Viryavardhak, Kamodeepak. Sweta and Rakta are two variety of gunja.

### **Synonyms**

Rakta, Raktika, Tamrika, Krishanchudika, Uchatta, Shitapaki, bhillubhushnika, Aruna, Chudamani, Shikandi, Kakanti, Kambhoji.<sup>[7]</sup>

**Mechanism of Action-** Abrin is irritant and CNS depressant, thermo liable to albumin. It is a toxic portion similar bacterial toxins in its action. It is antigenic in nature and causes agglutination, hemolysis and cell destruction. Abrin is composed of two polypeptide chains(A and B) connected by a disulfide bridge. On ingestion, one of its polypeptide chains(B) binds to the intestinal cell membrane, while the other chain (A) enters the cytoplasm. Once in cell, the A chain acts on the 60s ribosomal subunit, inhibiting protein synthesis and leading to cell death.<sup>[5]</sup>

**Fatal Dose-** 90 to 120mg./IM or SC. or IV of injected or crushed 1-2 Seeds orally.<sup>[6]</sup>

**Fatal Period-** 3 to 5 days.

**Therapeutic Dose-** 62.5 to 187.5mg. of seeds.<sup>[8]</sup>

**Sodhan** - The gunja seeds are pound it into small pieces and tie in cloth to make pottali. Keep the pottali in Dolayantra Which consists of Godugdha and boil it for 6hours. Another method is prepare pottali keeping gunja seeds and keep pottali in Dolayantra which contains kanji and swedan for 3hours and dry it in sunlight. Another method is keep the pottali which contains Sweta gunja seeds in Dolayantra contains Godugha for three hours. Remove the outer shell of seeds and wash in hotwater.<sup>[9,10,11,12]</sup>

**Therapeutic use** – Gunja seeds best used as Kamvardhak, Urusthambnasak, balvardhak. Gunjapatra are also sothhar, amavatnasak, bestvedanahar, Gunjamool madur, kaphnisaarak, vatpitthar, trisha, sothhar, swarbhedprasamak, vantihar, mutrakrichhar, kaashar, vishhar, balya, sukrajanan, mukhapaka, netraroga.



Gunjaseeds's lepa also effective in Sandhisoth, pain, baldness, paralysis, Sciatica, frozen shoulder, leucoderma.<sup>[13]</sup>

**Ayurvedic Yoga** – Gunjajivan Rasa, Gunjagarbha Rasa, Gunjabhadra Ras, Gunjadi Taila etc.<sup>[14]</sup>

**Visha lakshans** (Sign. and symptoms)- Shareeradourbalya, raktasrava, tandra, moha etc.

1. Ingestion (Oral)- Less fatal
2. Parental route (Gunja suchi or Inj.abrin)- Very fatal

**Ingestion**- Burning sensation in mouth, throat, chest, epigastric region. Excessive salivation, nausea, vomiting, pain and cramps in Abdomen. Watery purgation, sometimes with blood stains and mucous. Excessive thirst and Oligourea, dilated pupil, hallucination, tachycardia, and circulatory collapse.

**Parental route-** Redness, painful inflammation, swelling, oozing, ecchymosed, necrosed wound at site. Vomiting, general prostration, faintness and vertigo. Convulsion proceed death from cardiac failure rarely. If the extract of abrus seed injected on the skin or if applied on wound dermatitis, redness and rash. The produced are like viper snake bite poisoning and within 24 hours death occurs.

**Ocular exposure** – Redness, conjunctivitis and blindness.<sup>[5]</sup>

### Management of poisoning

#### A) According to Ayurved

- The Meghanada ras is given along with sugar or give cow's milk with sugar.<sup>[15]</sup>
- Give choulai swaras.
- Use of dates, grapes or tamarind, Amalaki juice or decoration with honey.

#### B) According to Modern Medicine

- Stomach wash
- Symptomatic treatment is given.
- Use of demulcent, Antiabrin etc.
- Oral administration of hydrochloric acid-pepsin.
- Maintain the alkality of urine(ph), for this give 10gm sodium bicarbonate in day
- Give Inj.-calcium gluconate for tremor.
- Manage patient with haemodialysis for renal failure.<sup>[1,16]</sup>

**Postmortem Appearance:** Edema at the site of injection. Petechial hemorrhages may be seen under skin, pleura, pericardium and peritoneum.<sup>[1,16]</sup>

**Ingested Poison- GIT:** Hemorrhages, edema and congestion. Internal organs are congested and show hemorrhages in intestines, brain, myocardium, and pleura. Necrosis, edema, hemorrhages are seen lymph nodes, kidneys.<sup>[1,16]</sup>

### Medico legal importance

- Commonly seeds are used for killing cattle (Sui) and homicide.
- Powdered seeds are used by malingerers to produce conjunctivitis.
- When taken internally they disturb the uterine function and prevent conception.
- The seeds are used as an abortifacient and as arrow poison.

- Causes of attractive color of seeds, children may ingest them.<sup>[1,16,17]</sup>

## DISCUSSION AND CONCLUSION

Toxicity of gunja is due to albumin abrin. Acharyas mentioned different type of sodhan for Gunja. Without Shodhan process gunja is a toxic plant. Without purification methods it should not be used internally for medicinal purpose, if used it may be fatal. To overcome its hazardous effect chaulai/tanduleeya swaras (antidote) is also mentioned. Its action is resembling Viperine bite. Commonly seeds are used for killing cattle and homicide. The roots and leaves of abrus contain substances similar to Glycyrrhizin. Hence Gunja root is used for substitute of Glycyrrhiza. Even if Ghunguchi is a toxic Drug, if purified properly according to ayurvedic texts and in appropriate therapeutic doses it will cure quite a lot of diseases. From present study it is suggested that, more research work has to be conducted on Gunja plant to promote use of plant for various purposes without hazardous effect.

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