

REVIEW OF GUNJA AND IT'S TOXICITY (ABRUS PRECATORIUS)

Dr. Sandeep Kumar Kushwaha* and Dr. Sheetal Choudhari**

*M.D. Scholar, Dept. of Agad Tantra Evam Vidhi Vaidyak, Rani Dullaiya Smriti Ayurved P.G. Mahavidyalaya, Evam Chikitsalaya, Bhopal M.P.

**Lecturer, Dept. of Agad Tantra Evam Vidhi Vaidyak, Rani Dullaiya Smriti Ayurved P.G. Mahavidyalaya, Evam Chikitsalaya, Bhopal M.P.

*Corresponding Author: Dr. Sandeep Kumar Kushwaha

M.D. Scholar, Dept. of Agad Tantra Evam Vidhi Vaidyak, Rani Dullaiya Smriti Ayurved P.G. Mahavidyalaya, Evam Chikitsalaya, Bhopal M.P.

Article Received on 11/09/2018

Article Revised on 01/10/2018

Article Accepted on 22/10/2018

ABSTRACT

In Ayurveda visha is of two types Sthavar Visha & Jangam Visha. Sthavara Visha is further subdivided into Mahavisha & Upavisha. Gunja is come under Upavisha which has less potent toxic than Mahavisha. Although it has poisonous tendency but it is used in various diseases, especially in the skin diseases. All the parts especially seeds of this plant are toxic & contain variety of toxalbumin glycosides like Abrin, Haemoagglutinin etc. Ingestion of Gunja result in nausea, abdominal pain, diarrhoea, dysarrhythmia in most cases. Gunja (*Abrus Precatorius*) is used as medicine after proper detoxification(Shodhana Process) without Shodhana it act as poison. Gunja usually known for cattle poisoning & arrow poisoning. This article complies all the information related to Gunja Such as introduction its review, fatal dose, fatal period therapeutic action, Sign & symptom of it toxicity, Post Mortem appearance medico legal aspects etc.

KEY WORDS: Gunja, Abrus precatorius, Abrin, Toxicity.

INTRODUCTION

Abrus Precatorius, know commonly as jequirity, crab's Eye, Rosary Pea, John Bead, is a slender, Perennial climber that twines around trees, shrubs, and hedges. It is a legume with long, pinnate. Leafleted reeves. It is also known as Gunja in Sanskrit and some Indian language and Ratti in Hindi. The plant is toxic due to the presence of abrin. The seeds of *Abrus Precatorius* very similar in weight in older times Indians used to measure using these seeds and the measure was called as Ratti, this was used to generally measure gold and 1 Tola (11.6 Gram) = 12 Masha, 1 Masha = 8 Ratti.

General Description- Gunja belong to family leguminosae. it is a shrub like climber with many branches. The leaves are like tamarind tree and sweet in taste. In each legume there are 3-6 seeds. The legumes are 2.5 cm to 3.5 cm long containing red white and black coloured seeds. White coloured seeds are more poisoning.

Seed

- It is oval beautiful, red, white and black colour.
- Seeds are taste less and odour less.
- It was used by Indian goldsmiths for weighing Silver and Gold.
- 0.83 cm x 0.62 cm dlimensions, having the weight of 125 mg.

**Varnacular Names**

- | | |
|----------------|---|
| (A) Sanskrit - | (1) Ratikaa |
| | (2) Kaakananti |
| (B) Marathi - | Gunja |
| (C) Hindi - | Ratti, Ghunghchi |
| (D) English - | Indian liquorice, Jequirity, Gunchi, Ratti Rosary Pea |

Classification

According to Ayurved

- (1) Sthavara- Vegetative Poison
- (2) Upavish- Bhavaprakasha and Rasatarangini
- (3) Moolavish- Sushrut

According to Modern Medicine

Irritant - Organic - Vegetable Poison

Chemical Composition

Active Principles

- (1) Abrin (Toxalbumin)
- (2) Abrine (Amino acid)
- (3) Abralin (Glycoside)
- (4) Hemagglutinin (Lipolytic enzyme)

Mechanism of Action- Abrin is an irritant and CNS depressant, thermo labile, to albumin. It is a toxic portion resembling bacterial toxin in its action. It is antigenic in nature and causes agglutination haemolysis and cell destruction.

Fatal Dose

- Inj- Abrin 90-120 mg/IM or s c or IV
- gunja Suchi 1-2 Seed.

Oral

- Uncertain

Fatal Period

- 3-4 days (Minimum - 24 Hour)

Scientific Classification

- kingdom plantae : Plants
- Order : Fabales
- Family : Facial/ leguminosae - Pea family
- Genus : Abrus Adans - Abrus
- Species : Abrus Precatorius -rosary

Rasa Panchaka

- Rasa - Tikta, Kasaya
- Guna - Laghu, Ruksa
- Virya - Usna
- Vipaka - Katu
- Karma - Kaphavatahara, Vriya, Balya,

Types of Gunja - It is of 2 Type

- (1) Sweta
- (2) Rakta

Differential Diagnosis of Injection Abrine and Viper Bite

Sr.	Feature	Abrin	Viper Bite
1.	History of	Inj Abrin or Gunja Suchi	Viper Bite
2.	Fang Mark (Bite Mark)	--	Two fang mark at site of bite
3.	Fragment of abrin	++	--
4.	Local Hemorrhagic Oozing	Mild	Severe
5.	Oozing	Coagulable	Incoagulable
6.	PT/PTT	Average	Increase
7.	Systemic bleed	--	Often +++++
8.	Subconjunctival bleed	--	Often+

Purification - Gunja seeds are purified by boiling them in sour gruel (Kanji) for 3 hour in dolayantra.

Losns;sìksfydk;U=s f};kea xO;nqX/kr%A
bRFka rq xqu~tkchtkfu
'kqf)ek;kURouqÙkeke~AA
¼j-r-&24@444½

Formulations

Ayurvedic Yoga - Gunjagarbha Rasa, Gunjajivan Rasa, Gunjabhadra Rasa, Gunjadi Taila etc.

Therapeutic use - Indralupta, Kusta, Krami, Kandu, Sula, Mukha Paka, Netraroga.

Sign and Symptoms

They can be produce by two routes-

- 1) Ingestion (Oral)- Less Fatal
- 2) Parental route (Gunja Suchi or Inj Abrin) - Very Fatal

Ingestion

- 1) Burning sensation in mouth, throat, chest and epigastric region.
- 2) Excessive salivation, Nausea and vomiting.
- 3) Pain, cramps in abdomen.
- 4) Watery purgation, sometime with blood stains and mucus.
- 5) Excessive thirst, oligourea, anurea.

Parental Route

- 1) Redness, Painful Inflammation, Swelling, Oozing, Ecchymosed, Necrosis Wound at site.
- 2) Vomiting general prostration, faintness and vertigo.
- 3) Convulsion proceed Death from cardiac failure rarely.
- 4) If the extract of Abrus seed is injected on skin or if applied on wound the symptoms produced are like viper snake bite poisoning and within 24 hours death occurs.

Treatment

A) According to Ayurved -

- 1) The juice of Tanduleeyaka is given along with sugar.
- 2) Give cow's milk with sugar.
- 3) Give dates, grapes or tamarind, Amalaki juice or decoration with honey.

B) According to Modern Medicine -

- 1) The removal of the needle abrasion from the body is very important.
- 2) Give Antiabortion
- 3) Give symptomatic treatment.
 - a) Give stomach wash
 - b) Use demulcent
 - c) Use acids like hydrochloric acid pepsin by mouth.
 - d) Maintain the alkalinity of urine, for this give 10gm sodium bicarbonate in day
 - e) Give Inj-calcium gluconate for tetanus.
 - f) Give haemodialysis for renal failure.

Postmortem Appearance**External**

Injected Poison - Inflammations, Swelling, Oozing, Ecchymosed, Wound, and Necrosis at site.

Ingested Poison - Not specific.

Internal-

Injected Poison - Not specific.

Ingested Poison - Inflammations and congestion with erosion and sub mucus hemorrhage in GIT fragment of seed residue may be found in stomach.

Medico Legal Aspects

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

DISCUSSION

- 1) Gunja is a poisonous plant, without detoxification.
- 2) Its toxicity is due to albumin Abrin.
- 3) Its action is like viperine snake bite.
- 4) It is a thermolabile poison. That is, abrin is destroyed on boiling.
- 5) That's why on detoxification (Shodhan Process of Gunja) its poisonous capacity is reduced and it is used as medicine.

CONCLUSION

Gunja is a toxic plant, without detoxification with different purification media one should not use internally for medicinal purpose, if used it may be fatal. More and more researches should be conducted over this

plant, so that science will be updated and people get awareness over this plant.

REFERENCES

1. Susruta, Susruta, Samhita, Susrutvimarshani Hindi commentary by Dr. Amantaram Shrama, Chaukhamba Subharti Rakashan, Varanasi 2012, Kalpa sthan.
2. Acharya Sadananda Sharma, Rasa Tarangini, hindi commentry by Pt. Kashinath Shashtri, Motilal Banarasidas, Varansi, Reprint 2000 Adhyaya 24.
3. Review of forensic Medicine and Toxicology Gautam Biswas. The health Science Publisher New Delhi third Edition, 2015.
4. Text book of Agada tantra, Dr. Nitin Urmaliya, Chaukhambha oriental Delhi, First Edition 2011.
5. A textbook of Agada Tantra, Dr. U.R. Sekhar Nomburi Chaukhambha Sanskrit Sansthan Varanasi, Edition 2015.
6. Textbook of Agada Tantra, Dr. Sarad Porty, Ayurved Sanskrit Hindi Pustak Bhandar Jaipur, First Edition 2016.
7. Bhavaparkasha of Bhavanishra (Poorvardha) 11th Edition 2009.
8. Textbook of forensic Medicine and toxicology, Anil Agrawal, Avinchal Publisher Company.