



A REVIEW ON GUNJA (ABRUS PRECATORIUS)

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ABSTRACT

The Visha Dravya Gunja is mentioned in ancient Sanskrit texts like Samhitas. In Samhita, it is categorized under Sthavara Visha, while in Rasashastra texts, it is classified as an Upavisha. The history of poisons and poisoning can be traced back thousands of years. *Abrus precatorius*, a highly invasive plant found in warm temperate to tropical regions, has spread widely and is now distributed across the globe. It is estimated that poison, in some form or another, is responsible for over one million illnesses worldwide every year. Many cases of poisoning, particularly in developing countries, go unreported. India has the highest incidence of poisoning globally. The most common causes of poisoning in India are plant toxins, pesticides, chemicals, and household poisons. Ayurvedic texts also mention the purification process (Shodhana) of Gunja. This article provides a comprehensive and critical analysis of Gunja based on Ayurvedic and contemporary texts.

INTRODUCTION

Gunja known as Indian liquorice, is reputed as one of the world's most deadly but most beautiful seed belonging to the family Fabaceae, characterised under *Upavisha* (semi-poisonous drugs) and used extensively in various Ayurvedic formulations with great therapeutic significance

Aacharya Charaka mentioned this drug in *Vajikarana Adhyaya* and *Aacharya Sushruta* classified *Gunja* under *Moola Visha*. In *Bhavaprakasha Nighantu* it is mentioned under *Guduchyadi Varga*, *Yogaratnakara* and other *Rasashastra* text mentioned it under *Upavisha*. According to *Rasatarangini* *Gunja* is a member of *Mitrapanchak* or *Dravakagana* and used in extraction of metals and tests of *Bhasma*. *Susruta* mentioned it under *Mula visa* (root poisons). *Thakur Balvant singh* quotes that either *Abrus pulchellum* wall and *Cardiospermum halicabacum* Linn. As the two possible sources in the context of *Gunja* as *Mulavisa*. *Krishna gunja* is the synonym of the later plant. *Bhavamisra* described *sweta* and *Rakta* varieties of *Gunja* and included it under *Upavisas*. It is a perennial climber bearing pink to purplish white flowers. It is found through out India.

Botanical name: *Abrus precatorius* Linn.

Family: Fabaceae (Papilionaceae)

Classical name: *Gunja*

Sanskrit names:

Vanavasini, Kakachinja, Rakthika, Krishnala, Durmeha, Bahurviryia

Regional names

Hindi - Chanoti, Rotti, Ghunghachi

Beng- Kunja

Mar- Gunja

Mal- Kunni

Guj- Chamothi

Eng- Indian liquoric root, Crabes eye.

Botanical description

A deciduous dextrose climber, with slender flexible and tough branches, the stem attaining 4.5m height and 1.2cm diam. Leaves 5-10cm long, Paripinnate; rachis produced beyond the last pair of leaflets as a soft bristle. Leaflets 10-20 pairs, opposite, increasing



slightly in size from the base, 7.3-23 by 3.8-6mm, linear-oblong, thinly membranous, entire, rounded at both ends, glabrous above when mature, thinly appressed- silky beneath.

Flowers 1-1.25cm. long, pink, clustered on tubercles arranged along the rhachias of a one-sided, usually leaf- bearing, axillary, pedunculate raceme 5-10cm long.

Pod 2.5-4.3 by 1-1.25cm, turgid thinly pubescent, with a sharp deflexed beak. Seeds 3-6, ovoid, 7.5cm. long, scarlet with a black spot at the hilum.

Flowering and fruiting time

Autumn to winters

Distribution-if there

Found throughout the tropics; It is also planted.

Chemical Composition

Seeds contain toxic protein; astringent acid, glucoside; haemagglutinin, some urease, and glycine-like active abrin albuminoid. Seeds potency gets inerted when they are boiled. Roots contain glycyrrhizin 15 percent and glycerol B percent. Leaves contain glycyrrhizin 10 percent and abrin. Seeds coat contains a red colouring substance.

Pharmacodynamics

Rasa: Tikta, Kashaya,

Guna: Laghu, Ruksa, Tikshna

Virya: Usna

Vipaka: Katu

Mula (Roots); Madhura, Snigdha

Doṣakarma: Kaphavatasamaka

Traidosahara (Patra- leaves; Mula- Roots)

Vatapitta samaka.

SHODHANA

Method 1

Reference: Rasatarangini (24/443-444)

Materials required: Godugdha (Cows milk), Asudha gunja

Apparatus required: Dolayantra, Iron rod

Pre operative procedure:

1. After proper authentication, the *Gunja* is collected
2. The external impurities are removed by wash and dried.

Procedure

1. Make a *potalli* with *Gunja*.
2. Tie the the *potalli* in a iron rod
3. Place the Iron rod in the *Dolayantra* across.
4. Fill *godugdha* in the *dolayantra* till the *potalli* get immersed fully.
5. Heat it and boil it for 2 *yama* (6hrs)

Post operative procedures:

1. Collect the *Gunja* from the *potali*.
2. Wash and Dry it
3. Store it in airtight containers.

Precautions:

1. Follow proper aseptic precautions.
2. Quantity of *Godugdha* (Cows milk) should be enough to immerse the *Gunja*.
3. After *shodhana* (purification) Dry it properly in shade.



Method 2

Reference: *Rasatarangini* (24/443-444) and *Rasamrita- Parishista*

Materials required: *Kanji*, (Sour gruel) *Asudha gunja*

Apparatus required: *Dolayantra*, Iron rod

Pre operative procedure:

1. After proper authentication, the *Gunja* is collected
2. The external impurities are removed by wash and dried.
3. Keep the *Kanji* (Sour gruel) ready.

Procedure:

1. Make a *potalli* with *Gunja*.
2. Tie the the *potalli* in a iron rod
3. Place the Iron rod in the *Dolayantra* across.
4. Fill the *Kanji* (Sour gruel) in the *dolayantra* till the *potalli* get immersed fully.
5. Heat it for 1 *yama* (3 hrs)

Post operative procedures:

1. Collect the *Gunja* from the *potalli*.
2. Wash and Dry it
3. Store it in airtight containers.

Precautions:

1. Follow proper aseptic precautions.
2. Quantity of *Kanji* (Sour gruel) should be enough to immerse the *Gunja*
3. After *shodhana* (purification) Dry it properly in shade.

Shodhana Effects: By boiling the seeds in water the toxicity is reduced.

Antidote: *Tanduliya Rasa* (*Amaranthus spinosa*) and sugar followed by milk

Both the varieties of *Gunja* are *kesya*, alleviates *vata* and *pitta*. Useful in *jwara*, *mukhasosha*, *bhrama*, *swasa*, *trushna*, *mada*, *netraroga*. It acts as *vrsya*, *balya*, *kandughna* and relieves *vrana* (Ulcers), *krimi indralupta* (Alopecia) and *kushta* (Skin disorders). The red variety gives handsome look for men. *Nadi uttejaka* (Nerve stimulant), *Balya* (Provide strength) *Madaka-Visakta*, *Garbhanirodhaka* (Abortifacient), *Snehana*, *Hrudayottajaka* (Stimulate heart), *Snehana-Kaphanihsaraka*, *Kushtaghna-Vedanasthapana*, *Vranaropana- Sothahara*, *Jwaraghna*, *Visa*, *Katupoustika*, *Kesya*

Roga

Vatavyadhi-Pakshaghata (Paralysis), *Urustambha* (gripping of the thighs) *Kasa-svarabheda* (Cough), *Klaibya*, *Mutrakrcha* (UTI), *Kushta* (Skin disorders), *Jwara* (Fever), *Dourbalya, Arsa* (Piles), *Jirna vrana* (Chronic Ulcers), *Khalitya-Indralupt* (Alopecia), *Mukhapaka* (Mouth ulcers), *Sirashula* (Headache), *Vranasotha- vrana* (Infectious ulcers), *Kaphaja-Vtaja vikara* (Bija seeds), *Tridoshaja vikara*, *Kandu* (Itching), *Nadivrana* (Pilonidal sinus), *Arbuda* (Tumors), *Apaci* (Cervical lymphadenitis)

Parts used: Seeds, Roots, Leaves

Dose : Seed powder 1-3 grains, Roots powder 10-20 grains, Leaves decoction 50-100gm.

Gana: *Mulavisa* (*Susruta*), *Upavisha* (*Bhavaprakasha*)

Formulations: *Gunjabhadra Rasa*, *Gunjadi lepa*, *Gunjadi varti*, *Gunja taila*.

Therapeutic uses

The purified seeds kindle sexuality. Seeds are useful in *Urustambha* (gripping of the thighs) and improve strength. The leaves have anti-inflammatory activity and useful in *Amavata* (rheumatoid arthritis). The root of this plant is sweet in taste, expels *Kapha*, clears sore throat, vomiting, cough, dysuria, act as an antidote to poisons and improves taste- perception and strength thus identical in properties to roots of *Yastimadhu* (*Glycyrrhiza glabra*). Hence it is used as a substitute to *Yastimadhu*. (*Glycyrrhiza glabra*).

In case of *Indralupta* (Alopecia) the area to be scraped and then the paste of *Gunja* (*Abrus precatorius*) is applied on the surface. During this treatment various *Rasayana* drugs may be administered. (*Susrutha samhitha, chikitsa* 20/25). The Oil processed with seeds of *Gunja* and the juice of *Bhringaraja* (*Eclipta alba*) relieves itching, dandruff and difficult disease related to the scalp. (*Vrindha Madhava* 57/75). In *Visarpa* (Herpes zoster), leaf paste of *Gunja* is applied externally. (*Harita Samhita* 3/33). In *Shiroroga* (Headache), Snuff (*nasya*) with roots of *Gunja*. (*Gadani-graha* 3rd)



In *Krimidanta*, Root of Gunja may be chewed to relieve pain. (RM). According to *Rasatarangini Gunja* is a member of *Mitrapanchak* or *Dravakagana* and used in extraction of metals and tests of *Bhasma*. Leaves of *Abrus precatorius* are laxative, expectorant and aphrodisiac medicines and are used in urticaria, eczema, stomatitis, conjunctivitis, alopecia areata, migraine, lymphomas/leukemia and dysmenorrhoea. It is used for internal administration to treat various diseases as *Kushta* (skin diseases) according to *Susruta Samhita* and *Bhavaprakasha*. In case of *Sandhishotha* (Swelling in joints) Juice of fresh leaves mixed with some bland oil can be applied. Seeds are rubbed with a little water into a paste and applied to contusions to reduce pain and swelling. It is also applied to the bare skin in alopecia, in sciatica, stiffness of the shoulder joint, paralysis and other nervous disease. *Siraprachanna* (can be done with *Gunja kalka* and in *Grudrasi Gunjakalka Lepa* can be applied externally to reduce pain.

Paste is also given orally as to cure abdominal pain, tumors and for abortion. In a snake bite freshly collected root is chewed. In bronchitis and hepatitis decoction of root is used. Paste of leaves and seeds is applied on scalp for treating graying of hair. Seeds powder is used to cure worm infestation. Various African tribes use seeds powder as oral contraceptives. Decoction of fresh root is advised orally as an anti-convulsant and anti-malarial. Fresh leaves are chewed to cure mouth ulcers. In skin diseases the paste of leaves is applied twice daily for one week. Eyes are washed with decoction of leaves to cure the poor eyesight. Leaf juice is mixed with coconut oil and applied over the painful swellings of the body. Fresh leaf juice is taken 5 ml twice a day for 3 days to cure dry cough. Fresh root paste is applied on bite site in scorpion bite and swelling.

The seeds are poisonous, purgative, emetic, tonic and aphrodisiac; and they are used in nervous disorders. They are poisoning to cattle. The poultice of the seeds if used as a suppository in vagina brings about abortion. The roots are emetic and alexiteric. A paste of seeds *Gunja* and of the roots of *Chitraka* is made up with water and it is used as stimulant, dressing when applied over leukoderma freckles. The seeds known as jequirity (containing abrin and abric acid etc) are used as strong or drastic purgative and emetic drug only in small doses, but in large doses they become more poisonous than strychnine. The seeds are claimed to be useful as an oral contraceptive. The seeds powder boiled in milk are powerful tonic and aphrodisiac drug. A preserve of the decorticated powdered seeds is used as an anthelmintic drug. The roots, also known as Indian wild Liquorice. Is useful drug as an emetic, antidote and demulcent. An extract of the root is given orally for relief of obstinate coughs, sore throat and rheumatism. The roots are chewed or taken in other form in cough and throat infections.

DISCUSSION AND CONCLUSION

Ayurvedic classical texts discuss two types of *Gunja*, namely Shweta *Gunja*, which is more toxic. Both varieties of *Gunja* are utilized for medicinal purposes, both internally and externally. The *Acharyas* have specified various purification methods for *Gunja*. Improper purification can lead to toxic effects, but the texts also provide information on its antidote. Due to synonymous terms, there is uncertainty in identifying the *Gunja* drug. According to some authors, the Sanskrit term "*Uchchata*," mentioned by Acharya *Charaka* in the context of *Vajikarana*, refers to *Gunja*. However, *Dalhana*, in his commentary, clarifies that *Uchchata* is actually a small plant. He also states that individuals who consume *Uchchata* along with *Godugdha* (cow's milk) will be able to engage in sexual intercourse with a hundred women. On the other hand, *Gunja* is a creeper and acts as a mild aphrodisiac. Therefore, the *Uchchata* mentioned by Acharya *Charaka* in the context of *Vajikarana* is not *Gunja*. According to the Anandashram editor, the synonym "*Kakadani*" is considered as *Gunja*, but this is not the case in *Dhanvantari Nighantu*. The *Dhanvantari Nighantukara* identifies *Chudamani*, which refers to bangles worn by Adivasis and hill tribes, as *Gunja*. Additionally, he considers Shweta *Kambhoji* as the white variety of *Gunja*, known as Shweta *Gunja*. The roots of *abrus* contain substances that resemble glycyrrhizin, and the leaves also yield glycyrrhizin. Therefore, *Gunja* roots are used as a substitute for glycyrrhiza. Despite being a toxic substance, if *Gunja* is purified according to classical texts and administered in appropriate therapeutic doses, it can effectively treat various

ailments.

Research Updates

1. Alcoholic extract of seeds showed Parasympathomimetic effect on smooth muscle of guinea pig and rabbit, skeletal muscle of frog (J.Res.Indi. Med. 1971,6,139).
2. Aqueous extract of seeds showed anthelmintic activity which was absent in extract prepared by boiling seeds in water (J.Res.Indi. Med. 1975,10,138).
3. LD₅₀ of Abrin A and B in mice is found to be 10 and 15µ/kg respectively. Both fractions showed antitumour activity against Ehrlich ascites tumor cells (Int. J. Pept. Protein Res. 1978, 12, 311).
4. Seed extract (10mg/ml/day) showed antispermatogenic activity in rat. (Ind. Med. J. 1987,81,157)

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