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A COMPARITIVE ANALYTICAL STUDY OF TWO TYPES OF SHODHITA GUNJA

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ABSTRACT

Gunja[1] is one among the Upavishas, which is effective in Kushta, Kandu, Vrana and indralupta in various dosage forms such as Taila, Churna, Rasa, Lepa etc. Shodhana is a procedure that converts a poisonous drug into a therapeutically very effective medicine. Adverse effects of the poisonous plants are mainly due to the improper Shodhana. In Ayurveda it is not only a process of purification, but also to enhance the potency and efficacy. Here shodhana of Gunja bija is done in Godugdha and kanji as per Rasatarangini and the its physico-chemical changes are analyzed.

KEYWORDS: Gunja, Shodhana, Kanji, Rasatarangini.

INTRODUCTION

Gunja or Jequirity seeds, from a well known toxic plant in Ayurveda under *Upavisha vargas*, must be used after proper *Shodhana*, which helps to prevent the fatal effect and improve the medicinal value.

Shodhana[2,3,4], It is a pharmaceutical process applied to all substances of metallic, mineral, animal, and herbal origin before they undergo *Marana*. While the term *Shodhana* literally

means purification, in the context of *Rasashastra*, it goes beyond mere cleansing. It is considered a form of *Saṃskara*, a transformative procedure that not only purifies the substance but also alters and enhances its inherent properties.

In *Rasasastra*, most raw materials are naturally sourced from the earth. However, in recent times, certain *Rasa Dravyas* are also synthetically produced. Therefore, the process of *Shodhana* is employed not only to remove toxic properties but also to impart or enhance specific qualities that facilitate the safe and effective assimilation of these substances in the human body.

उद्दिष्टैरौषधैः सार्द्धं क्रियते पेषणादिकम्।

मलविच्छित्तये यत्तु शोधनं तदिहोच्यते॥ (R.T.2/52)

Shodhana is the process in which a substance is treated through trituration and other suitable methods using specific agents to eliminate impurities or undesirable components.[5]

Gunja- Drug review[6]

Botanical name: *Abrus precatorius* Linn.

Family name: Fabaceae

Synonyms: *Vanavasini, Kakachinja, Rakthika, Krishnala, Durmeha, Bahurvirya*

Regional names:

English : Jequirity

Hindi : Ratti, Ghungchi

Kannada: Guluganji, gulagunja

Tamil : Kunrimani, Kundumani

Telgu: Guriginga, Gurivinda

Malayalam: Kunni

Morphology: This deciduous climbing plant has slender, tough stems reaching about 4.5 m in height and 1.2 cm in diameter, enabling it to twine around supports. Leaves are paripinnate, 5–10 cm long, with 10–20 opposite pairs of linear-oblong leaflets that increase in size toward the tip. Mature leaflets are smooth above and silky beneath. Flowers are small (1–1.25 cm), pink, and borne in one-sided axillary racemes 5–10 cm long. The fruit is a turgid pod (2.5–4.3 cm × 1–1.25 cm) with fine hairs and a curved beak, usually enclosing 3–6 scarlet seeds marked with a black hilum spot. These structural traits support climbing, pollination, and seed dispersal, reflecting the plant's ecological adaptations.

Distribution: Set up throughout the tropics, It's also planted.

Chemical composition: The seeds retain poisonous factors similar as the protein abrusic acid, the glucoside emulsion, haemagglutinin, certain quantities of urease, and an abrin-suchlike albuminoid suggesting glycine. Seeds energy gets inerted when they're boiled. The roots comprise about 15 glycyrrhizin along with a certain proportion of glycerol B. Leaves contain glycyrrhizin 10 percent and abrin. Seeds fleece contains a red colouring substance.

Varieties[7]

Table No. 1: Varieties of Gunja in classics.

Sl No.	Varieties	BN	RN	DN	AN	AR	NR	AC	SN
1	*Rakta*	+	+	+	+	+	+	+	+
2	*Sweta*	+	+	+	+	+	+	+	+
3	*Krishna*				+	+			+

BN-Bhavaprakasha Nighantu, RN-Raj Nighantu, DN-Dhawantari Nighantu, AN-Aadarsha Nighantu, AR-Abhidhana ratnamala, NR-Nighantu ratnakara, AC-Abhidhana Chintamani, SN-Saraswati nighantu.

Properties

Rasa : Tikta, Kashaya

Guna : Laghu, Ruksa, Tikshna Virya : Ushna

Vipaka : Katu

Dosha karma : Kaphavatasamaka

Karma : Vatahara, pittahara, keshya, kushtahara

Therapeutic uses: *Vatavyadhi-Pakshaghata, Urusthambha, Kasa-svarabheda, Klaibya, Mutrakrchra, Kushta, Jwara, Dourbalya, Arsa, Jirna vrana, Khalitya-Indralupta, Mukhapaka, Sirashula, Vranasotha- vrana, Kaphaja-Vtaja vikara, Tridoshaja vikara, Kandu, Nadivrana, Arbuda, Apaci.*

Parts used: Seeds, Roots, Leaves

Dose: Seed powder 1-3 grains, Roots powder10-20 grains, Leaves decoction 50-100gm.

Fatal dose: 90-120mg (1-2 seeds)

Fatal period: 3-5 days

Some important Formulations: *Gunjabhadra Rasa, Gunjadi lepa, Gunjadi varti, Gunja taila, Nili bringadi taila Gana[8,9]: Mulavisa, Aaragvadadhi gana (Susruta)*

Upavisha (Bhavaprakasha)

Table No. 2: Pharmacological Properties Attributed to Gunja in Different Nighantus.[10]

Name of books	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Doshakarma*	*Karma*	*Rogaghnata*
Dhanwantari Nighantu	*Tikta*	*Ruksha*	*Ushna*	*Katu*	*Vatakapha hara*	*Grahadoshahara, keshya, vrisya, jantughni*	-
Bhavaprakasha Nighantu	-	-	-	-	*Vatapittahara*	*Keshya, balya, vrishya*	*Mukhasosha, krimi, indralupta, bhrama, shwasa*
Madanapala Nighantu	*Katu, tikta*	-	-	-	*Pittakapha hara*	*Keshya, balya, netramayhara, vrishya, grahadoshahara, twachya, kandughna*	*Krimi, indralupta, kustha, kandu*
Raj nighantu	*Katu, tikta*	-	*Ushna*	*Katu*	*Vatahara*	*Ruchya, divya rasayani, sulaghna, palitstambhini, vantikar*	*Sotha, sula*
Kaideva nighantu	*Tikta, kashaya*	-	*Anushna*	*Katu*	*Kaphapitta hara*	*Keshya, balya, ruchya, sukrala, chakshusya, krimighna, kusthagna, kandughna*	*Krimi, indralupta, vrana, kustha, kandu*

CLINICAL FEATURES

- Burning sensation in mouth
- Drowsiness
- Convulsion
- Bloody diarrhoea
- Hematuria
- Oliguria
- Retinal damage

COLLECTION OF RAW MATERIALS

- *Swetha Gunja bija* and other *dravyas* are collected from a drug dealer and was authentified by the Department of *Dravya guna*
- *Tila taila* and *Godugdha* – were purchased from local area.

1. PREPARATION OF KANJI[11]

Date: 11/11/2024 - 27/11/2024

Reference- AFI

Apparatus required: Vessels, spoon, cora cloth, sieve, measuring jar, weighing machine.

Table No. 3: Ingredients for *Kanji.*

Sl No.	Ingredient	Amount
1.	*Shashtika shali*	3120 g
2.	*Masha*	3120 g
3.	*Mulaka*	1560 g
4.	Water	23400 ml

METHOD OF PREPARATION

- *Shashtika Shali* and *Masha* are taken in mentioned quantity and boiled till it gets half cooked.
- *Mulaka* is made into thin slices and added to it.
- The vessel is selected and *Dupana* is done.
- Then boiled *Shashtika Shali, Masha, Mulaka* and 23400 ml water is added into the vessel and stirred well.
- Then it should be kept undisturbed for 15 days.
- Then it is observed for 3rd, 5th and 7th days.
- After 15 days the preparation is siphoned out and filtered.

Table No. 4: Observations OF Preparation OF *Kanji.*

Date	Room temperature	Limewater test	Effevervesence	Color	Odour (amlata)	pH
14/11/2024	32.6	-	-	-	-	5.30
16/11/2024	35	-	-	Pale	slightly	5.30
18/11/2024	31.3	-	Slightly	Off white	Increased	4.99
26/11/2024	32.2	-	Moderately	Pale white	Strong	4.48
27/11/2024	32.8	-	Moderately	Pale white	Strong	4.44

2. SHODHANA OF GUNJA BIJA IN GODUGDHA[12]

Date: 18/11/2024

Reference – *Rasatarangini*

Apparatus required: *Dolayantra*, cora cloth, spoon, vessel, measuring jar, weighing machine

Duration- 2 *Yama*

Table No 5: Ingredients for shodhana of gunja bija in godugdha.

Sl no.	Ingredient	Amount
1.	*Gunja bija*	300 g
2.	*Godugdha*	3020 ml

Fig. 1: gunja bija shodhana in godugdha.

Table No. 6: Observations of preparation of *shodhana* of *gunja* in *godugdha.*

Time	Temperature (in ℃)			observations
	Flame	Pot	Milk	
10.00 AM	102	204	45.6	1000 ml milk added
10.30	187	264	88	Started boilng
11.00	187	265	88	Quantity of milk reduced. So again 700 ml milk added
11.30	202	267	100	250 ml milk added, the color of milk changes to light creamish
12.00	194	269	98	200 ml milk added
12.30	199	273	100	200 ml milk added
1.00	200	275	101.8	400 ml milk added
1.30	200	280	102	The color of milk changed into dark creamish
2.00	230	282	107	-
2.30	239	288	107	270 ml milk added
3.00	241	288	107	-
3.30	243	291	108	-
4.00	274	294	108	The size of *Gunja Bija* got increased and the milk got thicker consistency

RESULT

Weight of *Gunja Bija* after *Shodhana*: 727 g

PH of milk before *Shodhana*: 7.82

PH of milk after *Shodhana*: 6.96

Color of milk before *Shodhana*: Pure white

Color of milk after *Shodhana*: Dark cream

3. SHODHANA OF GUNJA BIJA IN KANJI

Date: 27/11/2024

Reference – *Rasatarangini*

Apparatus required: *Dolayantra*, cora cloth, spoon, vessel, measuring jar, weighing machine

Duration- 1 *Yama*

Table No. 7: Ingredients for *Shodhana Of Gunja Bija* in *Kanji.*

Sl no.	Ingredient	Amount
1.	*Gunja bija*	300 g
2.	*Kanji*	4500 ml

Fig. 2 gunja bija shodhana in kanji.

Table No. 8: Observations of preparation of *shodhana* of *gunja* in *kanji.*

Time	Temperature (in ℃)			observations
	Flame	Pot	*Kanji*	
1.15 PM	83.6	198	48.3	1500 ml *Kanji* added
1.25 PM	140.4	227.4	68.9	Started boilng, 200 ml *Kanji* added
1.45 PM	142	204	77	300 ml *Kanji* added
2.15 PM	162.7	216	81.3	800 ml *Kanji* added, the color of milk changes to light creamish
2.45 PM	168.7	251	101.5	450 ml *Kanji* added
3.00 PM	169.2	253	102	250 ml *Kanji* added, the color of milk changes to dark creamish
3.15 PM	238.4	279	103.3	400 ml *Kanji* added
3.45 PM	265	281.3	103.4	200 ml *Kanji* added
4.00 PM	267.4	283	103.4	400 ml *Kanji* added
4.15 PM	270	288.6	103.6	The size of *Gunja Bija* got increased and the *Kanji* got thicker consistency

RESULT

Weight of *Gunja Bija* after *Shodhana*: 681 g

PH of *Kanji* before *Shodhana*: 4.44

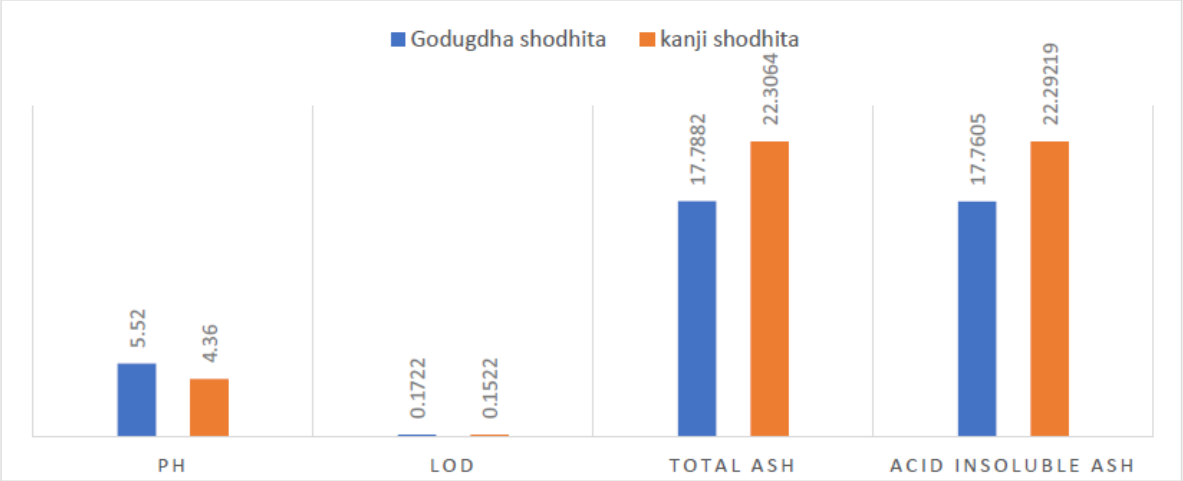
PH of *Kanji* after *Shodhana*: 5.12

Color of *Kanji* before *Shodhana*: Pale white

Color of *Kanji* after *Shodhana*: Dark cream

Table No 9: Analysis Of *Go*dugdha *Shodhita* And *Kanji Shodhita Gunja Bija.*

Analytical parameters	*Godugdha Shodhita Gunja Bija*	*Kanji Shodhita Gunja Bija*
pH	5.52	4.36
LOD	0.1722	0.1522
Total ash	17.7882	22.3064
Acid-insoluble ash	17.7605	22.29219



Graph 1: Comparison of physico-chemical parameters godugdha and kanji shodhita Gunja bija.

DISCUSSION

Gunja, being an *Upavisha Dravya*, the *Shodhana* procedure is having its own importance for increasing the efficacy of sample eventhough the *Shodhana* is not mandatory for external applications. Abrin, the toxic constituent of *Gunja*, can cause allergic reactions, blisters, and irritation. After *Shodhana*, the drug is purified, and the abrin content in *Gunja* is eliminated.

CONCLUSION

- Gunja is one among the upavisha dravyas and can be used in various medicinal preparations only after the proper purification procedures.
- It is indicated in netra roga, sarpa visha, kushta, kandu, vrana etc.
- All parts of the plant are toxic, but the most toxic part is seed which contains the active principle Abrin.

- Abrin inhibits proteins synthesis and thereby causing cell death. It also causes kidney failure, heart failure and respiratory paralysis.
- Exposure to abrin on the skin can cause allergic reactions, blisters, irritation etc.
- It is used in more than 109 classical formulations, more than 12 dosage forms and around 30 diseased conditions both externally and internally.

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