

## A NEW METHOD FOR DETOXIFICATION OF *ABRUS PRECATORIUS* (LINN): GUNJA SEEDS.

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### ABSTRACT

*Abrus precatorius* commonly known as Gunja has been used for therapeutic purpose since Vedic period. The roots, seeds and leaves are used in traditional & folklore medicine. Seeds of Gunja are reported to be poisonous due to toxic protein abrin and alkaloid hypaphorine. Several methods are reported to detoxify the gunja seeds by using milk, water and kanji. Present paper deals with detoxification (sodhana prakriya) for *Abrus precatorios* (Linn) seeds. The aim of new method is to give alternate method for detoxification of gunja seed. Here sodium chloride solution was used as media for detoxification, it had reduced abrine content by 50%.

**KEYWORDS:** *Abrus precatorios*, Detoxification, Gunja, Sodhana.

### INTRODUCTION

India is one of the largest producers of medicinal herbs; about 7500 species of higher plants are reported to possess medicinal value. The demands for plant based medicines are increasing very fast worldwide. Among the traditional system of medicine *Abrus precatorius* Linn. is one of the important herb commonly known as Indian liquorice family fabaceae. It is perennial climber, it has compound leaves, bright red seeds with a black patch on one side of each seed. Its pharmacological activities include antitumor activity, immuno modulatory, antifertility, abortifacient, anti-inflammatory, antiallergic, antiasthmatic.<sup>[1, 2, 3]</sup> etc. *Abrus precatorius* seeds are known to be under the most toxic plant parts worldwide even though it has tremendous pharmacological potential, plant is ignored.<sup>[2,3,4]</sup>

Seeds of *Abrus precatorius* (Gunja) are reported to be poisonous due to toxic protein abrin and alkaloid hypaphorine. Seeds are subjected to the process of Sodhana: an ayurvedic processing done for detoxification then used in therapy.<sup>[5,6]</sup>

Here an attempt is made to study effect of traditional ayurvedic detoxification method (Sodhana) on toxin and to develop an alternative method to reduce the toxic constituents of gunja.

## MATERIALS AND METHODS

For study seeds of gunja were purchased from local market of Ahmednagar. Standard obtained from U.I.C.T. Mumbai. The experimental work utilized many classical as well as advanced techniques for study.

### Experimental work

#### Processing of gunja seed

The gunja seeds were cleaned, winnowed to remove foreign matter, then kernels of seeds were removed. One precaution was taken while handling the seeds that the powder of seeds should not be inhaled since it is very toxic and it can enter in body via inhalation, through skin, through ingestion. The uncoated seeds then powdered till we get fine powder of seeds. The powdered seeds are stored in a well closed container.

#### Detoxification of *Abrus precatorius* (Gunja) seeds

Detoxification in ayurveda is known as **Sodhana**. Media used for detoxification of *Abrus precatorius* was cow's milk (traditional media) and sodium chloride solution (new alternatives) and it is carried out in traditional DolaYantra.<sup>[7,8]</sup> Accurately 50gm of powdered seeds were weighed and placed in white cotton cloth and tied. This cloth was tied to a stick which looks as a Dola yantra: the powder was dipped completely but it was not touched to the bottom. This powder was boiled for 6 hours using Cow's milk and Sodium chloride solution separately. The detoxified powder was subjected to air dry in shade. The dried sodhit powder was stored in a well closed container.

#### Toxicity Testing of Detoxified (Sodhit) samples of Gunj

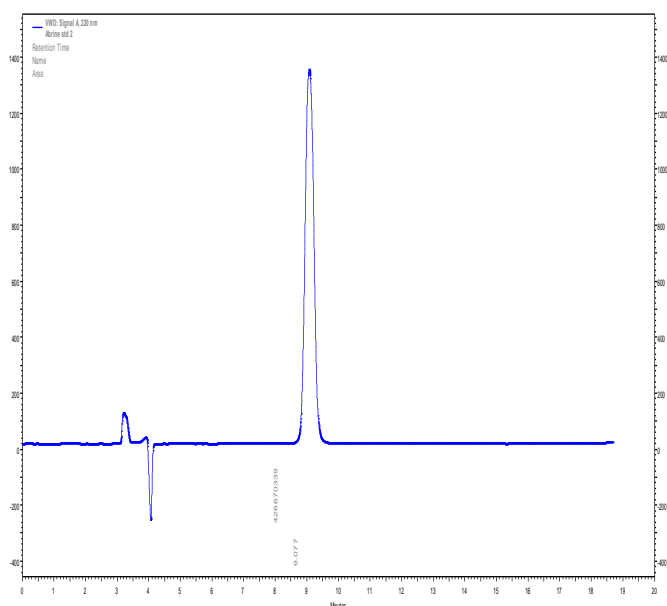
The analysis of toxin gives idea about effect of detoxification process hence processed samples of gunj were studied by using High Performance Liquid Chromatography (HPLC).<sup>[5]</sup>

**Chromatographic conditions****Instrument:** Agilent: LC 1220**Column:** Agilent TC-C18, 4.6× 250, 5μm**Detection:** UV Detector at 220nm**Mobile Phase:** Methanol: Water (20:80)**Flow rate:** 1 ml/min**Injection volume:** 20μl**Run Time:** 20 mins**Preparation of Standard solution of abrine**

10mg abrine was dissolved in 10ml methanol (1mg/ml). From the standard stock solution various solutions were prepared from 10 – 50 μg/ml.

**Preparation of Test solutions**

1g sample each of crude *Abrus precatorius* powder, Powder treated with Cow's milk and Powder treated with Sodium chloride solution was dissolved in 20ml solution of mobile phase separately. Then all the above three solutions were sonicated for 40 mins, filtered through whatmann filter paper and diluted with mobile phase. Resulting solutions were injected on to the column (Results were reported in table. no. 01).



**Fig. No.1: Representative chromatogram Abrine sodium chloride treated sample.**

**Table No. 01: HPLC results for different samples, #: Average of 5 different observations.**

Sr. No.	Solution	#Peak Area	Retention time
1	Abrine standard	426670399	9.077
2	Treated with Cow's milk	215301683	9.113
3	Treated with Sodium chloride solution	97145568	9.110
4	Crude extract	157672156	9.043

## DISCUSSION AND CONCLUSION

Literature reveals that abrine is very polar in nature, easily destroyed by heating and highly soluble in sodium chloride. Hence traditional media (Milk or Kanji) was replaced by sodium chloride solution. To compare the results we have applied both the traditional and new media to the same amount of crude seed powder. The time of heating was 6 hrs in both cases. Processing after heating like shade drying, compounding, storage condition etc kept same.

The preliminary photochemical studies and physicochemical properties of both the samples were studied. That shows that all properties are same for traditionally treated and new media treated samples. RP-HPLC results clearly indicates that sample treated with sodium chloride contains 50% less abrine than treated with traditional method.

## CONCLUSION

Thus the present work clearly indicates that we can use sodium chloride solution as an alternatives media to detoxify the seeds of *Abrus Precatorious* more efficiently. Since, we can reduce toxin levels of gunja.

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