

**PHARMACOGNOSY OF JAYPALBEEJ WITH PHARMACEUTICAL
STUDY OF SHODHANA PROCESS (PURIFICATION) OF JAYPAL
BEEJ(CROTON TINGLIUM L SEED)**

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ABSTRACT

Visha (Toxic) or upvisha (Less toxic) are toxic to human body in their natural form. These substances are not used directly for medicinal purposes. They are used as part of a treatment in human being, after undergoing various procedures which are known as Shodhan. Shodhan is an Ayurvedic procedure of detoxification. Shodhana (purification) also enhances the pharmaceutical qualities of the drugs. These ayurvedic procedures were known to Indian culture since hundreds of years. Jaypal Beej (Croton tiglium L seed) one of the Upavisha (less toxic drug) is used in preparation of many Ayurvedic drugs like “Ichchhabhedi Rasa”, “Chandramrut Rasa”, “Mahamrutyanjaya rasa” etc. So proper identification and shodhana is very important of this plant. Pharmacognosy of this plant done with SOP(Standard Operating Procedures) and discussed here. Rasatargini mentioned the shodhana process of Jaypal Beej in Godugdha (Cow’s milk) for three times. The

process is standard; materials are easily available. This method is used and discussed in this article.

KEYWORDS: Jaypal Beej, Visha, upvisha, Semipoisonous drugs, shodhana, Croton tiglium

INTRODUCTION

Agad tantra is a branch of Ayurveda which deals with the study of Visha & Upvisha (highly toxic and less toxic substances obtained from plants, animals, minerals and metals) with reference to their sources, characters, properties, therapeutics, toxic effects, Lethal dose. Along with method of detection and estimation of Vishas and their treatment.^[1]

Although these poisons are harmful and dangerous to life, still Ayurveda has mentioned the uses of 'Visha' and 'Upvisha' in medicinal preparation.^[2]

Jaypal falls under Upavisha Varga.^[3] Jaypal' is also called as 'Dravanti'^[4] due to its 'Rechankarma' i.e. the property by which Mala is converted into Dravarupa (liquid form), also the Jaypal is superior in virechan karma and it protects the people by curing diseases, So the name found meaningful as Jaypal.

It is indicated in diseases of many systems, e.g. Ichchhabhedi Rasa in 'Udara- swedawaha' strotas, 'Ambuvaha strotas', "Chandramrut Rasa" in 'Kasa-pranvaha strotas', "Mahamrityunajaya Rasa" in Jwar Annavaha / Rasavaha strotas etc.

Therefore it is an important drug and its safety must be ensured, if it is to be used in human being.

With this view and thoughts, shodhana is important and done with standard operating procedures(SOP) by classical text Rasa tarngini along with proper identification of drug (Pharmacognosy).

'Chemical Constitutents'^[5]

Croton tiglium seed contains- fatty fixed oil, Tiglic acid Crotonic or quartenylic acid Croton oil, Fats present in croton oil are glycerides of Stearic acid, Palmitic acid, Myristic acid.

Laurie acid and of several volatile acids of the same series like Acetic, Isobutyric, Valerianic, Tiglic, The seed also contain about 18% of proteins amongst which are the toxic albumoses, Croton-albumin and Croton-globulin, which together are also known as Crotin which resemble ricin.^[6]

Croton oil is composed of,

1. Crotonoleic acid which appers to be the active principle

2. Tiglic acid or Methyl Crotonic acid (C₆ H₈ O₂).
3. Crotonol(C₉ H₁₄ O₂) which is non- purgative but an irritant to the skin

AIMS & OBJECT

- 1) To procure & authenticate crude sample of Croton tiglium Linn seeds by methods of pharmacognosy.
- 2) To perform monitored shodhana process as mentioned by Rastarangini on part of seed sample.

PLAN OF WORK

- Authentication of Jaypal beej
- Shodhana process of Jaypal beej

MATERIALS AND METHODS

Collection of sample & Authentication

a) Collection of sample

Crude sample of *Croton tiglium* seeds was procured from standard vendor (Dhanvantari Pharmaceutical Industry, Alandi in Pune district).

b) Authentication

The seeds were studied for their morphological peculiarities.^[7]

The Observations were noted dawn. The seeds were, then examined for their microscopical peculiarities and all the observations were compared with the available literature^[8] (Flora's, Ayurvedic pharmacopoeia etc...)

Following steps were taken for the microscopical study The seeds have a very hard testa & hence need to be softened.

- 1) The seeds were soaked in hot distilled water for 3 hrs.
- 2) The seeds were then used for sectioning. (Transverse section).
- 3) Uniformly thin sections were taken with the help of s..knife/blade
- 4) The section was mounted on a clean slide in a drop of distilled water
- 5) Water was blotted and the section was stained with safranin to locate the lignified tissue.
- 6) Another section was stained with Sudan- red IV to locate the oil globules.
- 7) Then the excess stain was blotted and section was mounted in 8 to 10% glycerin.
- 8) After putting the cover slip the section was observed under 10x and 40x.

c) Standardization Report**Observation 1:- Organoleptic study.****Table no: 1.**

Test	Observation
Shape	Oblong, slightly quadrangular. Convex on dorsal side & flattened on ventral surface.
Size	12 mm in length.
Colour	Cinnamon - brown often mottled with black.
Odor	Not distinct.
Taste	Oily taste followed by an unpleasant acidity.

Observation 2: Microscopic study

1. Testa - Consisting of an epidermal layer, covered externally with thick cuticle & composed of oval and tangentially elongated cells filled with brown content epidermis is followed by a layer of radially elongated cells, slightly bent at the middle, upper half portion filled with reddish brown and lower half filled with yellowish content. Inner most zone consist of tangentially elongated, thin walled cells.
2. Endosperm Consist of polygonal parenchymatous cells filled with oil globules, a few cells having rosette crystals of calcium oxalate.
3. Embryo Dicotyledonous embryo consisting of thin walled parenchymatous cells.

Following specific character are seen in the section

1. Radially elongated cells slightly bent at middle, upper half portion filled with reddish brown & lower half filled with yellow content.
2. Endosperm consist of polygonal parenchymatous cells filled with oil globules.
3. Rosette crystal of calcium oxalate in few cells.
4. Dicotyledonous embryo.

Thus the Authentication & Standardization of Jaypal seed was done with the help of morphology and microscopy.

b) SHODHANA PROCESS OF JAYPAL BEEJ

- 1) Most of the Ayurved acharya had mentioned the same process (shodhana in godugdha) but only Rastarangini mentioned the shodhana process of Jaypal Beej in Godugdha (Cow's milk) for three times.^[9]
- 2) The process is standard, materials are easily available.

Shodhana Process

Materials

- 1) *Croton tiglium* (Seed)
- 2) Warm water
- 3) Blade
- 4) Godugdha (Cow's Milk)
- 5) Dolayantra
- 6) Cotton- cloth
- 7) Khala (Grinder)
- 8) Containers

Procedure

- 1) The seeds were divided in to two groups equally.
- 2) 100gm of Authenticated Crude sample of Jaypal beej was taken named as group "A"
- 3) 100 gm of the Authenticated sample of *Croton tiglium* was boiled in water for 3 hrs, named as group "B".
- 4) After boiling cover of the seed was removed.
- 5) Then the seeds were divided in to two parts with the help of blade.
- 6) After making the two parts, the tongue like structure which is present inside the seed is removed.
- 7) Godugdha was taken in a dolayantra, the sample of group "B" is kept on a cotton cloth and four corner of cotton cloth is taken together & tied the knot to form a small bag. This small bag (Pottali) containing sample was dipped in to 'Godugdha'. Sample was fully immersed into Godugdha.^[10]
- 8) Dolayantra containing sample was kept on gas fire, with the help of low flame (Mandagani), sample is boiled for three hrs.
- 9) After boiling sample was removed from small cotton bag & kept in the shadow for 24 hrs for drying.
- 10) Next day, same procedure of shodhana was repeated.
- 11) After shodhana process sample was kept drying for 24 hrs.
- 12) On third day, same procedure of shodhana was repeated
- 13) The sample was kept drying for 24 hrs. Other group A sample was also dried for 24 hrs in the shadow
- 14) Both the samples were powdered in khala (Grinder,) & a fine powder was prepared.

Observation:- Table no : 2

Samples	Process	Colour	Smell	Weight
1. Seeds of <i>proton tiglium</i>	Before Shodhana	Brown	Acrid Pungent	100gm.
	After shodhana	Dark Brown	Smell of Godugdha	100gm.
2. Godugdha	Before shodhana	White (Milk)	-	300 ml
	After shodhana	Blackish.	Pungent	100 ml
3. Powder of seeds of <i>Croton tiglium</i>	Before shodhana	Brown	Acrid, Pungent	90 gm.
	After shodhana	Dark Brown	Smell of godugdha with Acrid	80 gm.

DISCUSSION

Authentication done with SOP of pharmacognosy. It shows that the sample is *Croton tiglium* seed. During the process of shodhana the outer covering of Jaypal beej was not easily detachable, for removing the outer cover the Jaypal beej is boiled in water for 3 to 4 hrs, the process is carried out in Godugdha (cow's milk). The seeds & cow's milk remain contact with each other for considerable time period. Yellowish brown colour of seed, became dark brown. No other organoleptic change was seen. During the process of shodhana the outer covering of Jaypal beej was not easily detachable, for removing the outer cover the Jaypal beej is boiled in water for 3 to 4 hrs, the process is carried out in Godugdha (cow's milk). The seeds & cow's milk remain contact with each other for considerable time period. Yellowish brown colour of seed, became dark brown. No other organoleptic change was seen.

Physical studies of powdered sample of *Croton tiglium* seed before Shodhana revealed that, percentage Ash value before shodhana was more than that of after shodhana (i. e. 2.20% & 1.5% respectively). % moisture content before shodhana was more than that of after shodhana (i. e. 2.18% & less than 0.5% respectively). % water soluble extractives before shodhana was more than that of after shodhana process (i. e. 8.68% & 3% respectively).

SUMMARY AND CONCLUSION

This work can be summarized as follows

A) Authentication reveals

1. Radially elongated cells slightly bent at middle, upper half portion filled with reddish brown & lower half filled with yellow content.
2. Endosperm consist of polygonal parenchymatous cells filled with oil globules.
3. Rosette crystal of calcium oxalate in few cells.
4. Dicotyledonous embryo.

B) Shodhana reveals

1. Preliminary physical studies showed, decrease in Moisture content in after shodhana sample.
2. Total Ash value decreased in after shodhana sample.
3. Water soluble extractives decreased in after shodhana sample.

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