

## SHODHANA OF BHALLATAKA PHALA (*Semecarpus anacardium* Linn)- AN ANALYTICAL STUDY

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### ABSTRACT

Bhallataka (*Semecarpus anacardium* Linn.) is mentioned under *Upavisha* group in many Ayurvedic classics and it is also described as a poisonous medicinal plant in Drugs and Cosmetic Act, India (1940). Bhallataka has been used for medicinal and non-medicinal purpose since ancient times. Tarry oil present in the pericarp of the fruit contains Anacardic Acid which contains Urushiol, which cause blisters on contact. Bhallataka is as active as fire. It causes inflammation very soon, but if used properly, it will be as beneficial as nectar. Moreover it has been also mentioned in the group of 10 principal drugs for the management of Kustha. Here an attempt has been made to compare the impact of Ashodhita Bhallataka phala with Shodhita Bhallataka phala according to Rasa Tarangini by the physico-chemical parameters including TLC analysis.

**KEYWORDS:** *Semecarpus anacardium*, Bhallataka, Marking nut, Semecarpol, Bhilawanol.

### INTRODUCTION

The plant Bhallataka (*Semecarpus anacardium* Linn.) belongs to family Anacardiaceae; commonly known as marking nut, dhobi nut, *bhilava*, *bilba*<sup>1</sup>. The Plant Bhallataka is mentioned in Vedic period. Earliest references about Bhallataka are found in the Panini Sutra<sup>2</sup>. It is one of the best, versatile, most commonly used herbs as household remedy. A blister due to Bhallataka is different from other kind of wounds due to its nature of tissue damage in the form of producing poisonous effect<sup>3</sup>. In Annapaana raksha adhyaaya, Bhallataka is used as antidote for poisoned

drugs<sup>5</sup>. The word Visha is self-explanatory due its Swabhava<sup>6</sup>. Acharyas are warning to give cautious attention while using toxic drugs in medicinal preparations. The side effects of toxic medicines that are once used safely without any such ill effects might have made the next generation to think and find out a better solution to make the drug more effective. So Dravya Shodhana is a necessity to make the toxic drug more effective. So Acharyas are explaining certain purification procedures known as Shodhana procedures<sup>7</sup>. Samskara indicates processing the drugs by various procedures<sup>8</sup>. It seems

that by this Samskara the Acharyas become efficient in using these poisonous drugs in treating many diseases e.g. Bhallataka Rasayana<sup>9</sup>. Thus by the Samskara, the poisonous drugs are changing to non-poisonous drugs which in turn called as Shodhana Samskara<sup>10</sup>.

Ayurveda emphasizes selection of genuine and quality drugs for therapeutic uses. Selection criteria of the individual herbal drugs differ from drug to drug<sup>11</sup>. It is reported that Bhallataka (*Semecarpus anacardium* Linn.) fruits which sink in water, should be selected for the therapeutic uses<sup>12</sup>. It is advocated that Shodhana of Bhallataka fruits should be carried out before its internal administration.

### OBJECTIVES

1. Shodhana of Bhallataka Phala (*Semecarpus anacardium* Linn.)
2. Comparative analytical study of Ashodhita & Shodhita Bhallataka Phala.

### METHODOLOGY

Pharmaceutical source-Authenticated raw drug was collected from the trees growing wildly in the forest of Chhattisgarh and purification was done in Agadatantra practical laboratory of KVG Ayurveda Medical College Sullia, Karnataka.

### Materials required

Khalva yantra, Cloth, Gunny bag, Gloves, Measuring cylinder, Mask

### Shodhana Procedure

There are different Shodhana methods mentioned in Ayurveda, the Shodhana method mentioned in the text Rasatarangani was adopted which mentions the procedure as rubbing of Bhallataka fruit with brick powder. Afterwards washing it in warm water.

Thus matured fruits of *Bhallataka* were collected from the trees growing wildly in the forest of Chhattisgarh. To remove the moisture in it, these fruits were dried properly under shade and stored in zipped polythene bags for further studies.

The fruits were weighed and randomly made into pieces, then taken in a gunny bag. Ishtika Churna which was prepared by crushing the Ishtika into coarse powder was added. This was made into a pottali and then rubbed gently; with both hands under medium pressure. The procedure was repeated again by adding more Ishtika Churna. Finally the Bhallataka fruits were collected and washed in hot water<sup>13</sup>.

### Precautions

- i) Extreme precaution was taken while handling the Ashodhita Bhallataka fruit.
- ii) Coconut oil should be applied on hands and face before the procedure<sup>14</sup>.
- iii) Full gloves, mask and apron were used while doing the procedure.
- iv) At the end of the procedure, the fruits were carefully removed and washed with hot water<sup>15</sup>.

### Observation during Shodhana

#### Before the process of Bhallataka Shodhana

200gm Bhallataka Phala was cut into piece and oily secretion was found on the surface of the cut pieces. Bhallataka had hard texture, faint odour and blackish in color. Brick powder was made by crushing the brick into coarse powder and it was bright red in colour.

#### During The Process of Bhallataka Shodhana

On rubbing the Bhallataka Phala with ishtika churna on moderate pressure, the Bhallataka

phala was found to be secreting more oil. The oil was adhered to the gloves and also to the bag/pottali. Its color changed slightly blackish red as ishtika churna absorbed oil from Bhallataka phala. Ishtika churna also became brownish black. Bhallataka phala became softer in texture.

Small blisters were developed on the person performing the procedure even after doing it under precaution.

### After The Process of Bhallataka Shodhana

After the process of Shodhana, Bhallataka was separated from ishtikaChurna and was thoroughly washed with hot water. Oily secretion from Bhallataka was found to be increased tremendously. Bhallataka was found to be soft in texture and blackish in color and oily in odour. The IshtikaChurna which was separated from Bhallataka was also found blackish in color.

From 200 gm of fresh Bhallataka, 170gm Bhallataka was obtained after the process of Shodhana. Thus, 30 gm was loosed during the process of Shodhana.Total time taken for Shodhana was about 6 to 7 hours.

### Siddhi Lakshana<sup>16</sup>

- i) The brick powder fully absorbs oil from Bhallataka fruits and turns into grayish black colour.
- ii) The epicarp of the fruit is separated from it.

## RESULTS

### Organoleptic Evaluation:

Parameters observed	Before Shodhana	After Shodhana
Color	Black	Black
Odour	Faint	Faint
Texture	Hard	soft

## OBSERVATION

### i) Comparison between Ashodhita and Shodhita Bhallataka.

Similarity in Color and Odour, Texture is different.

### Physico-Chemical Evaluation:

#### Showing the results of physical analysis of Bhallataka

Parameters	Ashodhita	Shodhita
Foreign matter (%)	Nil	Nil
Moisture Contents (%)	3.81	4.37
Total ash (%)	2.73	3.23
Acid insoluble ash (%)	0.270	0.315
Water soluble extract (%)	3.96	6.64
Alcohol soluble extract (%)	32.72	26.34

## OBSERVATION

### Comparison between Ashodhita and Shodhita Bhallataka

The comparison of the data reveals that in the parameters like total ash, water soluble ash and acid insoluble ash there is small difference among the Ashodhita Bhallataka and Shodhita Bhallataka. In case of Ashodhita Bhallataka, water 3.96, Alcohol 11.72, Total ash 2.73, Moisture Contents 3.81, Acid insoluble ash 0.271 extractive values are lesser than Shodhita Bhallataka. Foreign matter is Nil in both samples.

### Phytochemical Screening

The results obtained after the phytochemical analysis of the aqueous, petroleum ether, ethyl alcohol and Chloroform extracts of Bhallataka (*Semecarpus anacardium Linn.*) are as follows,

**Showing the Components Present in various extracts of Ashodhita Bhallataka:-**

SL No	Tests	Aqueous	Methanolic	
1	<b>Carbohydrate</b>	Molisch's	-ve	-ve
		Fehling 's	-ve	-ve
		Benedicts	-ve	-ve
2	<b>Starch</b>	-ve	-ve	
3	<b>Proteins</b>	Biuret test	-ve	-ve
4	<b>Steroids</b>	Salkowski reaction	-ve	+ve
5	<b>Flavonoids</b>	Shinoda test	+ve	-ve
6	<b>Cardiac Glycosides</b>	Keller killiani test	-ve	-ve
7	<b>Saponins</b>	Foam test	-ve	-ve
8	<b>Alkaloids</b>	Mayer's	-ve	-ve
		Hager's	-ve	-ve
		Wagner's	-ve	-ve
		Dragendroff's	-ve	-ve
9	<b>Tannins and Phenolics</b>	5 % FeCl <sub>3</sub>	+ve	-ve
		Lead acetate	+ve	-ve
10	<b>Amino Acid</b>	Ninhydrin test	-ve	-ve

**Showing The Components Present in Extracts of Shodhita Bhallataka:-**

SL No	Tests	Aqueous	Methanolic	
1	<b>Carbohydrate</b>	Molisch's	-ve	-ve
		Fehling 's	-ve	-ve
		Benedicts	-ve	-ve
2	<b>Starch</b>	-ve	-ve	
3	<b>Proteins</b>	Biuret test	-ve	-ve
4	<b>Steroids</b>	Salkowski reaction	-ve	+ve
5	<b>Flavonoids</b>	Shinoda test	+ve	-ve
6	<b>Cardiac Glycosides</b>	Keller killiani test	-ve	-ve
7	<b>Saponins</b>	Foam test	-ve	-ve
8	<b>Alkaloids</b>	Mayer's	-ve	-ve
		Hager's	-ve	-ve
		Wagner's	-ve	-ve
		Dragendroff's	-ve	-ve
9	<b>Tannins and Phenolics</b>	5 % FeCl <sub>3</sub>	+ve	-ve
		Lead acetate	+ve	-ve
10	<b>Amino Acid</b>	Ninhydrin test	-ve	-ve

**Observation of Components Present In Various extracts of Shodhita and Ashodhita Bhallataka:**

Both the Shodhita Bhallataka and Ashodhita Bhallataka gave the same negative results in Aqueous and methanolic test like

Carbohydrate, Starch, Proteins, Cardiac Glycosides, Saponins, Alkaloids, Amino Acid. Whereas the tannins and Phenolics showed positive result in aqueous but negative result for methanolic test.

### Result of Thin Layer Chromatography

**Sample** - Methanolic Extract of Bhallataka Phala.

**Mobile phase**- Benzene: Ethyl acetate=6:1

**Stationary phase**- TLC plate prepared with silica gel.



U. V. LONG  
WAVE LENGTH

AFTER IODINE  
VAPOUR

Showing Rf value of Ashodhita and Shodhita Bhallataka

	ASHODHITA	SHODHITA
Rf value	0.17	0.17
	0.28	0.30
	0.37	0.47
	0.42	
	0.50	

#### Observation:

##### i) Comparison between Ashodhita and Shodhita Bhallataka Phala:

Under the both sample gave one similar Rf value that is 0.17.

##### ii) Ashodhita Bhallataka Phala:

Under the Ashodhita Bhallataka Phala, total 5 Rf value present in which 4 Rf values are 0.28, 0.37, 0.42 and 0.50.

##### iii) Shodhita Bhallataka Phala:

Under the Shodhita Bhallataka Phala, total 3 Rf value present in which 2 Rf values are 0.30 and 0.47.

### DISCUSSION

Ayurveda advocates *Bhallataka* after *Shodhana*. Though there are different *Shodhana* methods of Bhallataka mentioned in Ayurveda, the method mentioned in the text *Rasatarangini* was adopted which mentions the procedure as rubbing the Bhallataka fruits with brick powder and then washing it in warm water.

Eventhough high precautions were taken during the process of *Shodhana*, some difficulties were faced. Blisters started appearing on both the arms of the person performing the *Shodhana* procedure. Another difficulty faced was the removal of brick powder from Bhallataka phala after the procedure of crushing it in pottali. So, it had to be washed in hot water so many times and dried with soft paper.

The impact of *Shodhana* was evaluated by pharmaceutical, physico-chemical and chromatographical parameters. Rf values of methanolic extract of processed Bhallataka fruits shows the difference when compared to the raw Bhallataka fruits, this clearly proves the chemical changes during *Shodhana*. Increased level of Anacardol was observed in *Shodhita* (processed) fruits in comparison to the raw fruits.

In Bhallataka, bhilawanols and anacardic acids are the main chemical constituent responsible for the blisters. Bhilawanol is known as Urushiol and the anacardic acids are closely related to Urushiol. Due to the decarboxylation of the oil, the anacardic acid gets converted into less toxic Anacardol. Decarboxylation process may



start right from cutting the fruit itself and will be catalyzed by giving heat/fire treatment. The increased level of Anacardol in the Shodhita Bhallataka may be due to the decarboxylation of the anacardic acid in the fruits.

More percentage of oil got reduced by brick powder, as it is having absorbing nature. So there are probable chances that some chemical changes have taken place due to the purification by brick powder.

### **CONCLUSION**

Shodhana with ishtika churna has evidently reduced the tarry oil present in the pericarp of Bhallataka fruits there by reducing toxicity of the fruits. Difference in the values of organoleptic evaluation, Phytochemical screening, TLC and Rf values of ashodhita and shodhita Bhallataka sample reveals that the chemical changes are taking place during the Shodhana process. The data revealed that the Bhallataka shodhana method mentioned in Rasatarangini is definitely reduces the irritant oil.

### **Scope of further research**

Further studies can be carried out to find out the chemical interactions between different media and the Bhallataka fruits during Shodhana procedure.

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IshtikaChurna before Shodhana



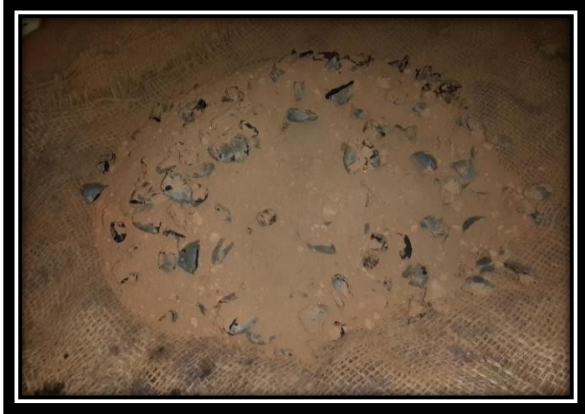
Ashodhita Bhallataka Phala



Crushing of BhallatakaPhala



Pottali of Bhallataka Phala with Ishtika Churna



Bhallataka Phala with Ishtika Churna



Ishtika Churna after Shodhana



Washing of Bhallataka Phala in hot water



Drying Shodhita Bhallataka Phala by soft Paper



Bhallataka Phala before wash