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A CASE STUDY ON TOXICOLOGICAL REVIEW OF BHALLATAKA

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ABSTRACT

Bhallataka is mentioned under *upvisha* group in ayurvedic classics,[1] as a poisonous medicinal plant in drugs and cosmetics act (india), 1940. The word semicarpus is derived from a Greek semeion which means marking/ tracing and carpus means nut. It is a plant which belongs to anacardiaceae family having potency to produce allergic manifestations through contact dermatitis.[2] Bhilwanol and semecarpal, two poisonous ingredients are found in *Bhallataka* nuts having certain therapeutic qualities. It has some local activity similar to *Sphotjananam (Ushna-Virya)* due to its hot potency. Following appropriate *Shodhana* (purification), this medication is used in many Ayurvedic formulations. If impure *Bhallataka* is used carelessly, it may have harmful effects such as blister formation, ulcer formation, burning feeling on the skin, and so on. The concerned individual was instructed to apply coconut oil externally and to take 5 gm of *haridra khand* granules twice a day and 5 gm of *avipattikar churna* three times a day internally along with plenty of coconut water. The presentation, management, autopsy findings, and medicolegal aspects of Semecarpus anacardium Linn are also described in modern toxicology.

KEYWORDS: Ayurveda, Toxicology, *Bhallataka*, Semecarpus anacardium, Medico-legal.

INTRODUCTION

Bhallataka (semecarpus anacardium linn.) Popularly known as marking nut, tree-dhobis nut, belongs to Anacardiaceae family. It has many therapeutic uses in Indian system of medicine. Preparations made by the nut of *Bhallataka* were being used in ancient time and still find a

place as an indigenous medicine. We are getting different kind of opinions on the properties of marking nut which is stated in Ayurveda scriptures and text books that *Bhallataka* is having some typical properties It is used in various diseases.

Semecarpus ancardium fruits are attached with receptacle. Receptacle is considered as false fruit. The color of the false fruit is green in unripe stage and turns yellowish orange on ripening. Pericarp is considered as its fruit. It is drupaceous, laterally flattened, obliquely ovoid, of 2.5–3 cm in length, is green in unripe stage and turns blackish brown when ripe. The nature of the fruit is smooth and shining with residual receptacle. Cotyledon is white in color and is 1–1.5 cm long. Microscopic studies with Sudan III has revealed that large amount of oil is present in the pericarp. Tarry oil is present in the pericarp of the fruit causes blisters on contact. The corrosive juice from the pericarp of the fruit contains catechol, fixed oil, and anacardol (C18H13O3.COOH) and the corrosive properties of the juice are due to two phenolic acids C16H15O3.COOH and C14H13O3.COOH.[3] Major chemical constituents of tarry oil are bhilawanol, a mixture of phenolic compounds, including cis and trans isomers of urushiol (3-pentadecenyl-8′catechol). Two incompletely identified phenols, perhaps analogous to the cardanol of Cashew Nut Shell Liquid (CNSL), being decarboxylated anacardic acids are also reported. Among these, one is being named as semecarpol, appears to be an undecenyl phenol and the other, named as anacardol, appears to be a dodecenyl phenol.

CASE REPORT

As a research purpose, purification of *Bhallataka (Bhallataka sodhana)* was carried out in the department of *kayachikitsa*. MMM. Govt. ayurved college, Udaipur. Three students who came in contact with fruits of *Bhallataka* at work place during capping of bhallatak reported contact dermatitis. They were treated in the O.P.D. of *kayachikitsa*, MMMGAC, Udaipur.

A female patient, age 24, developed contact dermatitis from *bhallataka* oil during *bhallatak's* shodhan due to improper handling of the utensils and disposal of media used in the procedure. She got rashes after 10 days of interaction with oil. On the first day, hands and legs were started to itch and developed red papules due to the papules' itchiness that extended to the knee joint.

After two days, despite the fact that rashes are becoming darker, she had *pittaj jwar* (high grade fever, burning in eyes, anorexia) along with *pratishyay* and greater itching in the rashes.

A day later, the papules were started to develop pus. Excessive scratching might be happened due to secondary infection, commonly by staphylococcal and streptococcal species.[4]

The body temperature was decreased after taking *Sadhya virechan*. Itching and *pittaj jwar* were subsided after three days of *Sadhya virechan*. Almost complete resolution of every symptom was found within five days (only hyperpigmentation remains.)

MANAGEMENT AND OBSERVATION

On the starting there was confusion whether it was because of *bhallataka* or sheetpitta rashes. so the patient was advised to take *Haridra khanda* - 5gm twice a day internally along with internal and external medication. The subject was advised to take tender coconut water twice daily.

EXTERNAL APPLICATION

1. Coconut oil with *karpoor*
2. *Nalpamaradi* oil

INTERNAL MEDICATION

1. *Avipattikar churna*
2. *Patolkaturohinyadi churna* 2gm bd for 3 days
3. *Triphala vati* for *virechan*

(On 1st day 4 tab., on 2nd & 3rd day 2 tab. With luke warm water)

FOR HYPERPIGMENTATION

1. *Varnya mahakashay vati* - 2 tab. Twice a day.
2. *Satdhaut ghrut* for local application

DISCUSSION

Bhallataka Nut Shell Liquid (BNSL) present in the pericarp of the fruit containing tarry oil having anacardic acid 90%, cardol 10% and bhilawanols (urushiols).[5] These are the chemical constituents responsible for the irritation and toxicity.

In Ayurveda, it is clearly mentioned that *Bhallataka* should be used after *Shodhana* (purification/processing). *Shodhana* plays an important role in reducing the adverse effects after internal administration. *Bhallataka* should be collected and processed with precautionary methods which are mentioned in Ayurvedic classics. Applying the coconut oil on exposed body parts and drinking tender coconut water reduce the irritation. Hence, one should apply coconut oil on face, hands and legs during the collection, drying, and the *Shodhana* process. To cure the dermatitis Pitta *Shamaka Dravyas* (drugs that alleviate *Pitta Dosh*) are used internally and externally. *Vibhitaki* (Terminalia bellerica), albumin of coconut, *Tila* (Sesamum indicum), and *Haritaki* (Terminalia chebula) are internally used as antidotes. Coconut oil and ghee are used externally. *Nimba Patra Kalka* (neem leaf paste) can

be used externally because of its Pitta *Shamaka* property. In Ayurvedic classics it is indicated for *Vrana* (wound), *Krimi* (worms), *Kushtha* (skin diseases), and Visha (poison). Recent researches have proved its antibacterial and wound healing activity. *Panchavalkala Kwatha* (bark decoction of five Ficus species) is indicated for cleaning the wounds, so can be used externally in the condition of *Bhallataka* blisters.

In the case presented here, firstly, coconut oil (topical application) was applied. After an hour, the paste was washed with *Panchavalkala Kwatha* and *Parisheka* (pouring continuously) with the same decoction *(Panchavalkala Kwatha)* was done for 30 min. This treatment was continued for 7 days. It showed good and quick results in subsiding the blisters. Internally *Avipattikar churna* for 5 days and *Triphala vati* for 4 days helped in curing the blisters rapidly.

CONCLUSION

Precautionary methods should be followed right from collection to the *Shodhana* process of *Bhallataka* (fruits) including use of disposable gloves, mask, handling and uses of utensils. Applying coconut oil before collection and during the process is very beneficial to avoid direct contact with *Bhallataka* fruits.[7] Pitta *Shamaka* measures should be followed to subside the urushiol-induced contact dermatitis. The *Shodhana* (processing) of *Bhallataka* should be conducted in an open place.

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