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AN EXPERIMENTAL STUDY TO OBSERVE THE EFFECT OF ASHODHITA & SHODHITA BHALLATAKA PHALA ON THE SKIN OF ALBINO RATS

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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 principle drugs for the management of Kustha. Here an attempt has been made to compare the effect of Ashodhita Bhallataka phala and Shodhita Bhallataka phala by experimental study on albino rats.

KEYWORDS: Semecarpus anacardium, Albino rats, Bhallataka Experimental study, Shodhana, Semecarpol, Bhilawanol

INTRODUCTION

The plant Bhallataka (*Semecarpus ancardium Linn.*) belongs to family Anacardiaceae; commonly known as marking nut, dhobi nut, *bhilava, bilba*[1]. The plant Bhallataka is mentioned from Vedic period onwards. Earliest references on Bhallataka are found in the Panini Sutra[2]. 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[3]. In Annapaana raksha adhyaaya, Bhallataka is used as antidote for poisoned collyrium[4]. Due to its irritant nature and difficulty to handle, Bhallataka is being avoided purposefully from many important formulations. Tarry oil present in the pericarp of the fruit contains Anacardic Acid which contains Urushiol, which cause blisters on contact[5]. Experiment on animals is a chief part of preclinical trial and provide a stable platform for the conduction of clinical studies, based on experimental interference. Various animal models have been prescribed for screening various activities. Hence before administering any drug to an individual it is desirable to experiment the same on lower animals. 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[6].

OBJECTIVES

To observe the effect of Ashodhita and Shodhita Bhallataka phala on the skin of albino rats

METHODOLOGY

Method of Bhallataka Paste Formation

Shodhana of Bhallataka phala was done in the laboratory of K.V.G Ayurveda Medical College, Sullia as per the reference in Rasatarangani[7]. Primarily the Bhallataka fruits were rubbed with Ishtika churna and then the paste of Shodhita Bhallataka phala was made by crushing the Bhallataka phala with water. Similarly paste of Ashodhita Bhallataka phala was made.

Equipments

Ashodhita and Shodhita Bhallataka Phala Paste, Diethyl Ether, Picric acid, surgical cotton, Swab holder, Spirit, Hair remover (fem cream) Butter paper, Pen, Graph Paper, Weighing machine.

Duration of Study

1 day (24 Hours)

Route of Administration

External application (dorsal surface)

Experimental Animals

i) The animals were bought from authorized breeders from Mangalore-Karnataka

ii) Wister strain albino rats not less than eight week old adult healthy albino rats of either sex, weighing around 150-200gms were selected randomly for the study.

iii) The rats were maintained under standard laboratory conditions, controlled with environmental, temperature, humidity and light dark cycles.

iv) Rats were fed with balanced pellet diet and drinking water of uniform volume.

GROUPING OF ANIMALS

Number of Rats used: 6 Rats in each group total 12 rats.

Group: two groups (Ashodhita group and Shodhita group)

Ashodhita bhallataka and shodhita bhallataka paste applied externally on the skin of rats.

Experimental Procedure

To know the toxic effect of Bhallataka Phala on rat's skin following steps were used-

i) Pre Procedure Stage

ii) Procedure Stage

Pre Procedure Stage

Total 12 albino rats were selected and categorized into 2 groups namely Ashodhita and Shodhita groups and they contained 6 rats each.

Procedure stage:

Animals were anaesthetized under Di-ethyl ether. After the animals were sufficiently anaesthetized, they were secured to the dissection plate in prone position. The hair was removed from the dorsal part to be inflicted. 2gm of Bhallataka paste was applied on the shaved area (approximately 2cm.) of each Rat. The animals were inspected every two hours. After 24 hours the area was cleaned by using distilled water and observed.

OBSERVATIONS AND RESULTS

Group	Redness	Mean of No. of Blister	Mean Diameter
Ashodhita	Present	16.6	3.73
Shodhita	Present	Nil	Nil

Observation after the Application of Ashodhita and Shodhita Bhallataka Paste on the skin of Rats:

i) After 24 hours of application of Bhallataka paste over the dorsal part of rats, the dorsal skin of rats which was pasted with Ashodhita Bhallataka paste became red as well as blisters appeared on the surface of all the rats.

ii) The blisters with irregular shape were found on that area where the paste was applied in Ashodhita group. There was no blister formation in shodhita group.

iii) The dorsal skin of rats which was pasted with Shodhita Bhallataka had become red in all six rats and there was no other changes observed in them.

iv) By calculating the mean of the number of blisters in Ashodhita Group, it appeared to be 16.6 with a mean diameter of 3.73cm of the blisters.

DISCUSSION

A total of 12 healthy and fully grown albino rats were randomly selected for the experiment. These 12 rats were further divided into two groups, each group containing 6 rats. Ashodhita Bhallataka paste was applied on the first group and Shodhita Bhallataka paste was applied on the second group and kept in observation for 24 hours. After 24hours, the paste was washed by distilled water, blisters with irregular shape were found on that area where the paste was applied in all the 6 rats in the Ashodhita group and there was neither any serious injury to any of them nor death occurred. There were no blisters in any of the 6 rats in Shodhita group. Small blisters were developed on the person performing the procedure even after doing it under precaution. 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 during Shodhana procedure.

CONCLUSION

This experiment revealed that the Shodhana procedure as per Rasatarangani proved to be one of the best methods of purification of Bhallataka Phala. This Shodhana procedure can be followed pharmaceutically so that we can use Shodhita Bhallataka for various Ayurvedic formulations.

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Ashodhita Bhallataka phala

Shodhiata bhallataka phala befor wash

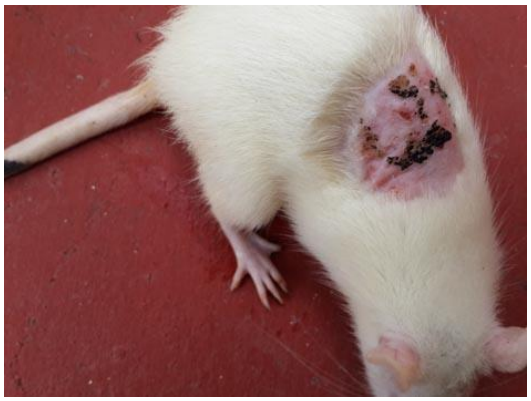
Bhallataka Paste preparation

removing of Hair

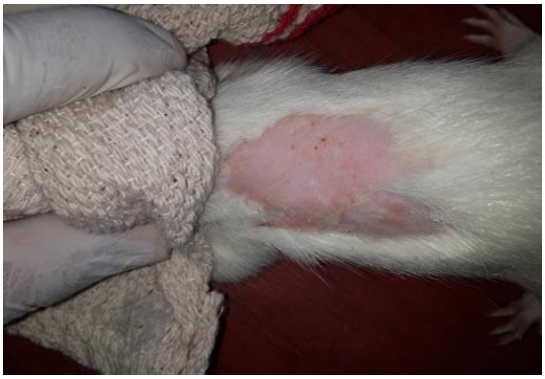
Application of Bhallataka Paste

Bhallataka paste over Albino Rats

Skin after 24 Hours in Shodhita Group Rat 2



Skin after 24 Hours in Ashodhita Bhallataka Rat 4



Skin after 24 Hours in Shodhita Group Rat 6

Skin after 24 Hours in Ashodhita Bhallataka Rat 8