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Research Article

OUTCOME OF SINGLE MAXIMUM LIMIT DOSE OF *ABHRAKA BHASMA* ON ALBINO RATS IN ACUTE TOXICITY STUDY – "A HISTOPATHOLOGICAL STUDY"

Rai Pankaj[1*], Gupta Laxmi Narayan[2], Neeraj Kumar[3]

[1]Associate Professor, Dept. of *Rasa* Shastra and Bhaishjaya Kalpana , Major S D Singh Ayurvedic Medical College and Hospital, Farrukhaabad, Uttar Pradesh, India
[2]Assistant. Professor, Dept. of *Rasa* Shastra, Faculty of Ayurveda, Banaras Hindu University, Varanasi, India
[3]Professor, Dept. of *Rasa* Shastra, Faculty of Ayurveda, Banaras Hindu University, Varanasi, India

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*Corresponding Author: **Dr. Pankaj Rai**
Associate Professor, Dept. of *Rasa* Shastra and Bhaishjaya Kalpana , Major S D Singh Ayurvedic Medical College and Hospital, Farrukhaabad, Uttar Pradesh, India

ABSTRACT

Background: *Abhraka bhasma* mentioned for treatment of various diseases.
Aim: To assess acute toxicity of *Abhraka bhasma* in albino rats.
Materials and Methods: In acute toxicity study, albino rats were administered orally *Abhraka bhasma* of single maximum limit dose 2000 mg/kg and histopathological study of kidney, liver and spleen of treated rats were carried out.
Result: Acute toxicity study shows that there is no adverse effect of *bhasmas* on albino rats even at single dose of 2000mg/kg body weight.
Conclusion: *Abhraka bhasma* is safe in albino rats.
Keywords: *Abhraka Bhasma*, Acute, Toxicity, Histopathological, Albino rats, Doses.

INTRODUCTION

Research is a process to find out the validity of the claims or concepts already known and to add new knowledge to the existing facts. Things which are traditionally practiced are challenged in the light of modern sciences and when scientifically proved then only it can be accepted globally. For scientific validation of known properties of drugs, experiments on animals are conducted and it can be accepted as scientific evidence for further clinical studies on human beings. Among the patients there is a widespread misconception that alternative medicines are harmless and carry no risk. However, some medicinal plants are naturally toxic [1]. There is a significant increase in the followers of *ayuverda* globally but there is insufficiency of scientific researches in this field. This makes it necessary to conduct toxicity study of *ayuverdic* drugs[2]. Department of Ayush, Government of India and Organization for Economic Cooperation and Development (OECD) sets guidelines for toxicity study.

Abhraka bhasma is a well known *ayurvedic* drug used for the purpose of treatment since long back in ayuverda successfully in many diseases [3].

MATERIALS AND METHODS

MATERIALS

Pharmaceutical processing's of *Abhraka* (Biotite) was done in the practical laboratory of Department of *Rasashastra*, Banaras Hindu University. 1 kg of *abhraka* (Biotite) was procured from *Ayurvedic* Pharmacy, I.M.S., B.H.U. Then this was subjected to *Shodhana* (purification) process according to traditional Ayurvedic procedures of *Nirvapa* [4] (Heating to red hot stage and immediately quenched in different medium) method using Decoction of *Triphala*[5]{pieces of dry fruits *Haritaki* (Emblica officinalis), *Vibhitaki* (Terminalia bellirica) & *Amalaki* (Terminalia chebula) }as media. Dhany*abhraka* [6] is an intermediatory process in between *shodhana* (purification) and *marana* (calcinations) in case of *abhraka*. *Shodhit* (purified) *abhraka* was mixed with 1/4th of un husked rice and tied in cotton cloth. This tied cloth was soaked in *Kanjii* (filtered product of fermented boiled rice and radish in water) for 3 days. Then this was rubbed with both palms till fine particle comes out. This fine particles were collected in vessel and evaporatyed. Product obtained is called *Dhanyabhtaka*.

Arka Patra Swarasa (Juice of leaves of Calotropis procera) was selected for levigation media in *marana* (calcination) [7] .
First of all measured weight of Dhany*abhraka* was taken and was levigated with liquid media.. After levigation pellets of uniform size & shape were made. Pellets were kept on plastic sheets for drying under sunlight. Dried pellets were kept in *sarav* (Silica casserole) and covered with another one and put in electric muffle furnace for heat treatment. Process was repeated for 24 times. Finally Brick red color powder was obtained and regarded as *Abhraka bhasma*.

Method

Acute toxicity tests are generally the first tests conducted. They provide data on the relative toxicity likely to arise from a single drug exposure. The study was conducted after obtaining institutional animal ethical committee clearance according to Rule 170, Deptt. Of Ayush, Government of India and OECD guidelines 420.

Place of Experiment

Animal house, Department of Rasa Shastra, Faculty of Ayurveda, IMS, BHU.

Selection of animal species

The preferred rodent species was the Albino rat. Females Sex was used in the study. Females were nulliparous and non-pregnant in between age of 8 and 12 weeks and approx 200mg wt.

Housing and feeding conditions :

The temperature of the experimental animal room was maintained at 22ºC (+ 3ºC) and **Relative humidity** between 30% and 70%. Lighting was artificial, the sequence being 12 hours light, 12 hours dark. For feeding, conventional laboratory diets were used with an unlimited supply of drinking water. Animals were group-caged by dose.

Preparation of animals

The animals were randomly selected, marked to permit individual identification, and kept in their cages for 7 days prior to the start of dosing to allow for acclimatization to the laboratory conditions.

Preparation of doses

The required test compound was weighted on the meter balance as per standard procedures on a butter paper. Then Weighed test compound was transferred into centrifuge tube containing gum- acacia. Appropriate volume to be administered was made as per the calculated dose.

Test Compound: *Abhraka bhasma*

Dose: Animals were examined on single maximum limit dose 2000 mg/kg of each test compound.

Group

A total of ten animals of female sex were taken for the study. The each group have five animals. The two groups were made one for test group while second group was control group. The tested groups were treated with the test drug while controlled group treated with honey.

Route of Administration: Oral route.

Duration of Drug Administration: Single dose of each dose label were given once.

Observation:

Acute Toxicity: Acute toxicity of *Abhraka bhasma* was evaluated in albino rats as per protocol[8]. The behavioural changes closely observed for were: hyperactivity, ataxia, tremors, convulsions, salivation, diarrhoea, lethargy, sleep and coma. Total observation period for eventual mortality was 14 days[9]. Animals were observed individually after dosing at least once during the first 30 minutes, periodically during the first 24 hours, with special attention given during the first 4 hours and daily thereafter, for a total of 14 days for any mortality.

Method of Sacrifice

In order to maximize the amount of useful examinations that can be obtained during the examination period, all animals were sacrificed rather then allowed to die after drug administration. In acute toxicity study after 14 days, 24 hours over nigh fasted rats were sacrificed with overdose of anesthetic ether and important organs were dissected out for histopathological study.

Pathological study:

All test animals were subjected to gross necropsy. All gross pathological changes were recorded for each animal. Histopathological examination of kidney, liver and spleen were done to found out any toxic effect of *Bhasma*s.

RESULTS

No mortality was found during 14 days observation. Photographs of Histo pathological study is shown from fig 1 to fig. 3. No significant changes were found in the examination.

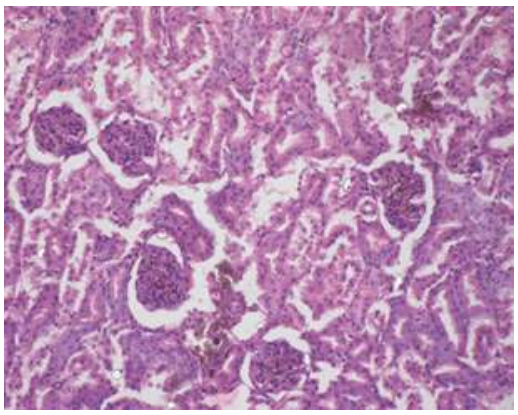

Figure 1: Microphotograph of Kidney of treated group showing normal glomerulus architecture (H and E Stain).

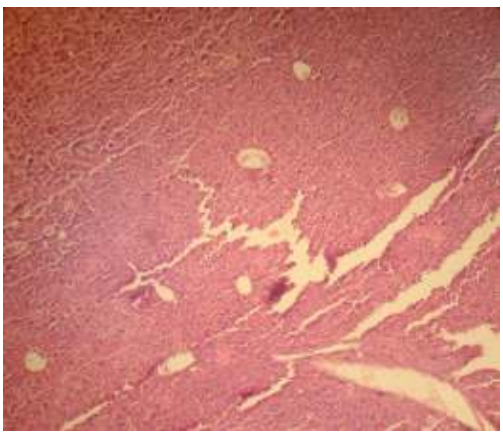

Figure 2: Microphotograph of liver of treated group showing normal hepatocytes architecture and tubeles (H and E Stain).

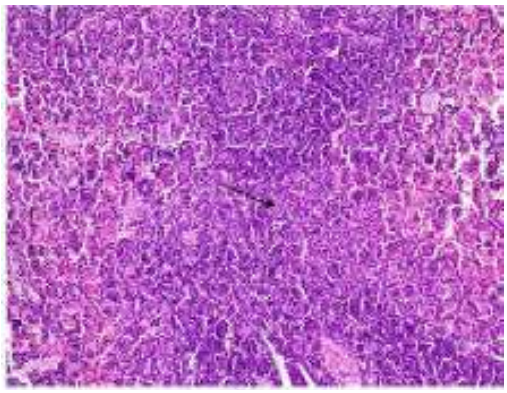

Fig. 3 Microphotograph of spleen picture-of treated group showing normal spleen tissue (H and E Stain).

CONCLUSION

In acute toxicity study albino rats do not showed abnormal behaviour for initial 4 hours after drug administration. No mortality was found during 14 days observation. Result of Histopathological examination of liver, kidney and spleen reveal no toxicity either in tested group or in controlled group. Acute toxicity study reveals that *Abhraka bhasma* is suitable for further clinical use.

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