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PHARMACOLOGICAL VALIDATION OF *Musa paradisiaca* BHASMA FOR ANTIULCER ACTIVI TY IN ALBINO RATS – A PRELIMINARY STUDY

R. Vadivelan , K. Elango, B. Suresh and B. R. Ramesh
Department of Pharmacology, J.S.S. College of Pharmacy, Ooty – 643 001.

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ABSTRACT

Siddha system of medicine is one of the ancient systems of medicine in India. According to Siddhars, peptic ulcer is known as Valigunmam with its signs and symptoms as detailed in Siddha literature matching modern terminology of peptic ulcer. Bhasma refers to calcinated metals and minerals. During this study the Bhasma of *Musa paradisiaca Linn.* is prepared and evaluated for its antiulcer effect in albino wistar rats which could not be attempted by researchers earlier.

INTRODUCTION:

Musa paradisiaca Linn (Family – Musaceae) is a tall herb with aerial pseudo stem dying after flowering[1, 2]. The plant is well known for its various medicinal properties 1.Roots are anthelmintic, antiscorbutic, depurative and tonic and are useful in veneral diseases, helminthiasis, scabies, inflammation, opthalmopathy, blisters and burns. 2. Fruits are sweet, demulcent, astringent, emollient, cooling, anthelmintic, aphrodisiac, antiscorbutic and tonic. They are used in vitiated conditions of pitta, dipsia, strangury and general debility. 3. Flowers are good for dysentery, diabetes, ascites and dropsy. 4. The inflorescence axis (stem) is specific for renal and vesical calculi. 5. Ash obtained by burning plant is antiscorbutic, anthelmintic and are used in hyperacidity, heartburn, colic and verminosis[3].

EXPERIMENTAL:

Plant Material:

The plant used in this study was collected from Mettupalayam, Tamilnadu, India.

Preparation of *Musa paradisiaca Bhasma*:

The ripe fruits of *Musa paradisiaca Linn* were cut longitudinally and covered with paste of *Cissus quadrangularis Linn* which is then covered with muslin cloth smears with mud, dried at room temperature and then incinerated at 700^0C for several hours till whole mass becomes red hot, then cooled. Adhering soil and other materials were removed carefully. White colour ash was separated and stored in an air tight container and used for experimental animal studies.

Anti Ulcer Screening Method:

The antiulcer screening of the Bhasma of *Musa paradisiaca* was carried out in albino wistar rats using Ethanol induced acute gastric mucosal lesions in rats.

Ethanol induced acute gastric mucosal lesions in rats[4]

24 hours fasted albino wistar rats weighing about 180-250 gms were selected and divided into four groups of 6 animals each. 1ml of 80% ethanol was used orally to produce gastric ulcers. Rats were pretreated with following groups 1hour before ethanol treatment. Group I received solvent control 0.3% carboxy methyl cellulose with water orally. Group II received Sucralfate 270mg/kg orally. Group III and group IV received *Musa paradisiaca* Bhasma 10mg/kg and 20mg/kg orally. One hour after ethanol administration animals were sacrificed by cervical dislocation under Pentothal sodium 40mg/kg, stomach was removed and cut along greater curvature. Ulcer index was calculated[5]. Lesions were counted with aid of hand lens (X10) and given severity rating as follows.

Less than 1mm (Pin Point) = 1.
1-2 mm = 2.
Greater than 2mm & above = 3.

Overall total in each group was divided by factor of 10, to get ulcer index. % Ulcer Index was calculated[6].

$$\frac{\text{Ulcer Index in Control - Ulcer Index in Test}}{\text{Ulcer Index in Control}} \times 100$$

Gastric Mucosal Defensive Factors: Estimation of Mucous barrier[7]:

Glandular portions of stomach of 24 hrs fasted rats were everted and soaked for 24 hrs in 10 ml of 0.1% alcian blue 8GX dissolved in 0.16 M sucrose buffered with 0.05 M sodium acetate adjusted to pH 5.8 with Hcl. Uncomplexed dye was removed by two successive washes of 15 and 45 minutes in 0.25 N sucrose. Dye complexed with mucous was dilated by immersion in 10 ml aliquots of 0.5 M magnesium chloride for 2 hrs. The resulting blue solutions were shaken with equal volume of diethyl ether and optical density of aqueous phase was measured at 605 nm. The barrier mucous was expressed in terms of microgram of alcian blue dye/g of wet stomach glandular tissues.

Mucous barrier [(microgram of alcian blue dye/g of wet stomach glandular tissues (g)]

$$= \frac{\text{Absorbance} \times 10^5}{\text{E1\% 1cm} \times \text{wt. of glandular tissues}}$$

E1% for alcian blue = 189

Estimation of Non – Protein Sulfhydryl (NP-SH) Group[8]

The glandular part of the stomach was homogenized in ice-cold 0.02m EDTA. Aliquots (5ml) of the homogenates were mixed in 15ml test tubes with 4 ml of distilled water and 1ml of 50% tricholoacetic acid. The tubes were shaken intermittently for 10 to 15 minutes and centrifuged at 3000 r.p.m. Two ml of supernatant was mixed with 4ml of Tris buffer pH 8.9; 0.1ml of 5, 5 -dithio-bis 2(nitro-benzonic acid) was added and the sample was shaken. The absorbance was read within 5 min of addition of 5, 5 –

dithio-bis 2(nitro-benzonic acid) at 412 nm against a reagent blank with no homogenate.

Statistical Analysis:

Statistical significance was determined by one way analysis of variance (one way ANOVA).

RESULTS AND DISCUSSION:

The results of the experiment are given in table1.It indicates that the Bhasma form of *Musa paradisiaca* has potent antiulcer activity. The antiulcer activity of Bhasma is evident by dose dependant change in gastric mucosal defensive factors like ulcer index, mucin content and non-protein sulfhydryl group. The change in mucin content and NP-SH group after the treatment with *Musa paradisiaca* Bhasma at 20mg/kg was more significant than 10mg/kg and the same as effective as Sucralfate (270mg/kg) a known cytoprotective agent.

The above observation supports our humble view that the Siddha form of *Musa paradisiaca Linn.* is indeed good antiulcer agent.

CONCLUSION:

In future, this work can be extended further for the toxicological studies at acute, sub acute and chronic levels and the pharmacological studies can be experimented by different ulcer models, so far not attempted.

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REFERENCES:

1. "Formulary of Siddha Medicines", The Medical Practitioners co-operative pharmacy stores Ltd., Chennai, 215 – 515, (1993)

2. Suresh, B. "Revitalisations of Traditional system of Medicine – A challenge for Pharmacy Profession" Eastern Pharmacist, 31-41, (1994).

3. Arya Vaidya Sala, "Indian Medicinal Plants", Vol.4, Orient Longman, Madras Ltd., 78-86, (1997).

4. "The Wealth of India", Publications and Information Directorate, New Delhi, 448-469, (1970).

5. Yoganarasimha, "Medicinal plants of India", Vol.2, Cyber media, Bangalore, 324, (2000).

6. Reshma Shetty, Vijay Kumar, K., Naidu, M.U.R. and Ratnakar, K.S. "Effect of Gingko Biloba extract on ethanol-induced gastric mucosal lesions in rats", Ind. J.of Pharmacol, 32, 313-317, (2000).

7. Asuzu. I.U. and Omu.O.U. “Anti-ulcer activity of the ethanol extract of Combretum dolichopetalum”, Int.J.Crude drugs Res.28, 1, 27-32, (1990).

8. Njar V.C.O., Adesanwo J.K., Makinde J.M.and Jaiwo. O.B., “Anti ulcer activity of the stem bark extract of entandrophargma angolenses”, Phytothe Res, 8, 44-8, (1994).

9. Kulkarni S.K and Goel R.K. “Gastric anti ulcer activity UL-409 in rats”, Indian J. Exp Biol. 34, 683-688, (1996).

10. Sedlak J. and Lindsay R.H. “Estimation of total protein bound and non-protein sulphydryl groups in tissue with Ellman’s reagent”, ‘Analyt Biochemi’ 25. 192-205, (1968).