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EVALUATION OF ANTIANXIETY ACTIVITY OF MIMOSA PUDICA

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Abstract:
The objective of present research work is evaluation of anti-anxiety activity of methanolic extract of Mimosa Pudica was evaluated employing a widely used model, elevated plus-maze. The model was selected as it is effective, cheap, and simple, less time overriding, requires no beginning training to the mice and does not cause much discomfort to the animals while handling. The model is mainly based on the observations that the revelation of animals to an eminent and open maze results in move toward–avoidance disagreement which is manifested as an exploratory-cum-fear drive. The fear due to height (acrophobia) induces anxiety in the animals when placed on the elevated plus-maze. The ultimate manifestation of anxiety and fear in the animals is exhibited by decrease in motor activity, which is measured by the time spent by the animal in the open arms. GABA is the major inhibitory neurotransmitter in the central nervous system and even slight deficiencies in GABA ergic transmission may lead to hyper excitability and pathological neuronal discharges leading to epilepsy.

Keywords: *Epilepsy, alkaloids, desiccators, antianxiety, phytochemical screening*

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INTRODUCTION:

Herbal drugs are the products in which herbs are used in crude or extract form. The basic idea of skin care cosmetic lies deep in the Rig-Veda, Yajurveda, Ayurvedic, Unani and Homeopathic system of medicine. In this modern era, the knowledge and experience of usage of herbs are being blend with advanced cosmetic technology to develop a safe and elegant beauty product, which has wider range of people acceptability. Basically it is beauty invented by nature and perfected through technology. Herbs have the advantage of having no or least adverse effect and have a wide spectrum of consumer compliance. The herbal cosmetic market has a share of almost Rs 200 crores out of an estimated Rs 2000 crores of total cosmetic industry in the country. The total cosmetic market is growing at the rate of 20-25% per annum. Out of this growth about 60% is that of herbal cosmetic segment (Sahu Alakh N, 2011). The most common form of drug delivery is the oral route. In this route of administration has notable advantages and also have significant drawbacks like first pass metabolism, drug degradation in gastrointestinal tract due to enzymes, pH etc. To overcome these difficulties a Novel drug delivery system was developed. In recent years it has been shown that the skin is a useful route for drug delivery to the systemic circulation. Transdermal drug delivery system includes all topically administered drug formulations intended to deliver the active ingredients into the circulation. They provide controlled continuous delivery of drugs through the skin to the systemic circulation (Latheeshjlal. L, et. al 2011). Herbs are staging a comeback and herbal 'renaissance' is already a global experience. Herbal products symbolize safety in contrast to the synthetics that are regarded unsafe to man and his environment. Despite the progress made in medical research in the past decades, the treatment of many diseases including inflammatory diseases is still problematic. Conventional drugs used to ameliorate these conditions are either too expensive or toxic, there is therefore an urgent need to search for newer, cheaper and safer medications (Agbaj E. O. et al, 2011). Due to having adverse side effects, like gastric lesions, caused by NSAIDs and tolerance and dependence induced by opiates, the use of these drugs as analgesic agents have not been successful in all the cases. Therefore, analgesic drugs lacking those effects are being searched all over the world as alternatives to NSAIDs and opiates. During this process, the investigation of the efficacy of plant-based drugs used in the traditional medicine have been paid great attention because they are cheap, have little side effects and according to WHO still about 80% of the world population rely mainly on plant based drugs (Zulfiker AHM).

Nature has provided a complete store-house of remedies to cure all aliments of mankind. From the vast natural resources, the plants are being used for therapeutic purposes from the beginning of the civilization. Herbal medicines derived from plant extracts are being increasingly utilized to treat a wide variety of clinical diseases, though relatively little knowledge about their mode of action is available. There is a growing interest in the pharmacological evaluation of various plants used in Indian traditional systems of medicine. The research into plants with alleged folkloric use as pain relievers, anti-inflammatory agents, should therefore be viewed as a fruitful and logical research strategy in the search for new analgesic and anti-inflammatory drugs. Because existing synthetic molecules like nonsteroidal anti-inflammatory drugs (NSAIDs) and selective COX-2 inhibitors that increase the incidence of adverse cardiovascular thrombotic effects. So, in order to overcome, there is need to focus on the scientific exploration of herbal drugs having fewer side effects (Narkhede M. B et al 2012).

MATERIALS AND METHODS:

Collection & Identification of Plant material:

The crude drug of Mimosa Pudica was collected from the village bhauri. The plant part will be shade-dried, powdered to # 40 mesh particle size and stored in air tight container. Plant specimens were identified and authenticated in Department of Pharmacognosy, RKDF College of Pharmacy, Bhopal. The powder drug of whole plant was dried in shade & used for extraction.

Extraction of plant drug:

The powdered plant material (about 90 gm) was extracted with methanol (95%) in a soxhlet apparatus. The solvent was removed under reduced pressure, which obtained a dark brown sticky residue with respect to dried plant material. The dried extract was stored in a desicator till further study. The percentage yield of methanolic extract was calculated as 5.0% w/w.

Moderately Coarse Powder (90 g)

Dark brown | 28 hrs

↓

Extracted with methanol

OBSERVATIONS:

S.N.	Solvent	Time	Colour	Odour	Yield	% yield
1	Methanol	28 hrs	Dark brown	Characteristic	4.5 g	5.0%

Percentage yield = Practical yield/Theoretical yield × 100

Phytochemical Screening:

Phytochemical screening of methanolic extract of *Mimosa Pudica* was done to check the presence of chemical constituents present in plant extract. (C. K. Kokate, 2005 & Khandelwal, 2002).

Table: 1 Observations of Phytochemical Screening

S.N.	Phytoconstituents	Tests	Methanol Extract
1.	Alkaloids	Tannic acid test	-ve
2.	Tannins	Lead acetate solution test Acetic acid solution	+ve +ve
3.	Proteins	Xanthoprotic test Biuret test	-ve -ve
4.	Flavonoids	Alkaline reagent test Shinoda test	+ve +ve
5.	Carbohydrates	Molish 's test Test for pentose's	-ve -ve
6.	Amino acids	Ninhydrin reagent test	-ve
7.	Volatile oil	Sudan III test	-ve
8.	Cardiac Glycosides	Legal test Baljet's test	-ve -ve
9.	Anthraquinone glycoside	Borntrager test	-ve

(+ve): Present, (-ve): Absent

RESULT AND DISCUSSION:

In vivo study for the assessment of anti-anxiety activity of plant drug:

Animals:

Albino rats of approximately 8-10 weeks of age weighing 40 to 60g were taken. The institutional animal ethical committee permitted the study. The animals were housed in standard cages, at room temperature (25 ± 3ºC), with 12hr light cycles, all the animals were fed with standard pellet diet. They were given 2 weeks time to get acclimatized with laboratory conditions.

Grouping of animals:

Group I: Received Vehicle (Control)

Group II: Standard group received Diazepam (2mg/kg)

Group III: Test group received methanolic extract of *Mimosa Pudica* (400 mg/kg)

Elevated plus maze (EPM) model of anxiety:

The plus-maze apparatus consisting of two open arms (16 × 5 cm) and two closed arms (16 × 5 × 12 cm) having an open roof, with the plus-maze elevated (25 cm) from the floor was used to observe anxiolytic behaviour in animals. Each mouse was placed at the centre of the elevated plus maze with its head facing the open arms. During this 5 minutes experiment, the behavior of the mouse was recorded as: (a) the number of entries into the open arms, (b) average time spent by the mouse in the open arms (average time = total time spent in open arms/number of entries in arms). Extract of *Mimosa Pudica* was administered orally using a tuberculin syringe fitted

with oral canula. The dose administration schedule was so adjusted that each mouse was having its turn on the elevated plus-maze apparatus 45 minutes after the administration of the dose. During the entire experiment, the animals were allowed to socialize. (Abidemi et al, 2012)

Table 2: Observations of Pharmacological activity

Treatments	Dose	Number of entries in open arms Mean ± S.	Average time spent in open arms Mean ± S.
Control	Vehicle	2.30 ± 0.25*	2.45 ± 0.29**
Standard	Diazepam (2mg/kg)	6.20 ± 0.48**	12.73 ± 0.52**
Methanol extract	(400 mg/kg)	4.10 ± 0.55*	4.50 ± 0.28**

SUMMARY AND CONCLUSION:

Anti-anxiety activity of methanolic extract of Mimosa Pudica was evaluated employing a widely used model, elevated plus-maze. The model was chosen as it is effective, cheap, and simple, less time overriding, requires no beginning training to the mice and does not cause much discomfort to the animals while handling. The model is principally based on the observations that the revelation of animals to an eminent and open maze results in move toward–avoidance disagreement which is manifested as an exploratory-cum-fear drive. The fear due to height (acrophobia) induces anxiety in the animals when placed on the elevated plus-maze. The ultimate manifestation of anxiety and fear in the animals is exhibited by decrease in motor activity, which is measured by the time spent by the animal in the open arms. GABA is the major inhibitory neurotransmitter in the central nervous system and even slight deficiencies in GABA ergic transmission may lead to hyper excitability and pathological neuronal discharges leading to epilepsy.

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