

RESEARCH ARTICLE

Received on: 25-01-2014

Accepted on: 10-03-2014

Published on: 13-03-2014

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Conflict of Interest: None Declared !

Pharmacological investigation of leaf extract of *Typha angustata* for depressant activity

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ABSTRACT

The methanolic leaf extract of *Typha angustata* was intended to evaluate the effect on the central nervous system (CNS) using a number of neuro pharmacological experimental models like open field test, hole board apparatus in mice. The extract, at the dose of 100 mg/kg body weight was shown significant CNS depressant activity by reduction in rearing and number of squares crossed in open field and reduction in head dipping in hole board apparatus. These results suggest that the methanolic extract possess significant CNS depressant activity when compared to the other groups.

Keywords: *Typha angustata*, depressant activity, open field, hole board test.

Cite this article as:

K. Ashok Kumar, M. Sathish Kumar, A. Narendra Babu, D. Eswar tony, N.V. Rama Rao, G. Divya Sri, M. Dastagiri
Pharmacological investigation of leaf extract of *Typha angustata* for depressant activity.
Asian Journal of Pharmacology and Toxicology 02 (03); 2014; 01-03.

1. INTRODUCTION

Typha angustata belongs to family called *Typhaceae*. It is a perennial plant breeding in shallow water of a pond or a river side. The height is 1.5- 2cm, and its leaf and stem are standing straightly. Its leaf is thick and has 5-12 mm thickness. *Typha angustata* is the most popular medicinal plant used for various medicinal properties and reported in many traditional literatures in India, as well as in China and Turkey. The leaves are used as diuretic¹. The pollen is astringent, desiccant, diuretic, haemostatic and vulnerans². It is used in the treatment of nose bleeds, haematemesis, haematuria, uterine, bleeding, and dysmenorrhea, post-partum abdominal pain and gastralgia, scrofula and abscesses². The root stock is astringent and diuretic³. It is contraindicated for pregnant women¹. It is used for inducing labor. It is used in acute experimental myocardial infarction in rabbits. The extract of the pollen from *Typha angustata* has ability to enhance the osteoinductive potential of demineralized bone matrix⁴. *Typha angustata* used in the study of acid mine water of wetlands⁵. It is used as anti-inflammatory agent⁶. *Typha angustata* contains naringenin which inhibits the vascular smooth muscles cell proliferation so that used as therapeutic agent in controlling of vascular problems⁷. It possesses antioxidants like flavonoids⁸. *Typha angustata* activated carbon can be successfully employed as low cost alternative to the commercial adsorbents in the removal of fluoride ion from wastewaters⁹.

Typha angustata is widely used as biomass, fiber, insulation, and miscellany, paper, soil stabilization, stuffing, thatching and weaning¹⁰. The stems and leaves can be used in making paper, can be woven into mats, chairs, hats¹¹. They are a good source of biomass, making an excellent addition to the compost heap or used as a source of fanatic. A fiber obtained from the roots can be used to make strings¹². The hairs of the fruits are used for stuffing pillow etc. They have food insulating and buoyancy properties. The pollen is highly inflammable and is used in making fireworks. This plant's extensive root system makes it very good for stabilizing wet banks of rivers, lakes.

2. MATERIAL AND METHODS:

Preparation of extract

Shade dried leaves of *Typha angustata* (*Typhaceae*) collected locally was authenticated and extracted with methanol through soxhalation.

Animals:

Swiss albino mice of either sex (25-30g) were maintained for the 5 days in the animal house of the Chalapathi Institute of Pharmaceutical Sciences, Guntur under standard conditions of the temperature, relative humidity (45-55%) and 12:12 light: dark cycle. The

animals had free access to food and water. Three mice per group were used in all set of experiments. All the experiments were conducted after obtaining the permission from Institutional Animal Ethics committee (IAEC). Care of animals was taken as per guidelines of CPCSEA, India.

Experimental design:

The animals were randomly divided into three groups & each group consisting of three mice. The test groups received *Typha angustata* at the dose of 100 mg/kg, i.p, while standard was treated with diazepam (1 mg/kg, i.p) and control with vehicle (0.9 % 5ml/kg normal saline water).

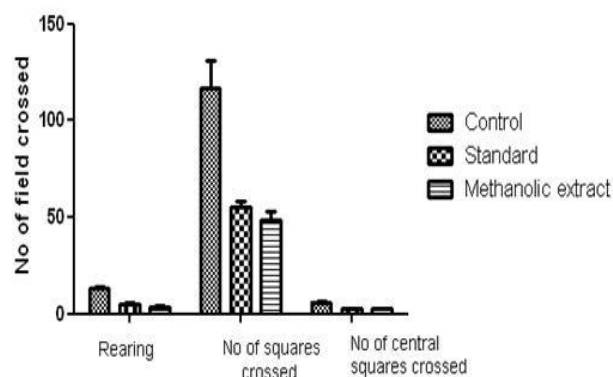
MODELS:

1. Open field test
2. Hole board apparatus

Open Field Test:

The animals were divided into control, standard and test groups. The test groups received *Typha angustata* leaf extracts at the dose of 100 mg/kg body weight intra peritoneal route whereas the control group received vehicle (0.9 % 5ml/kg normal saline water). The floor of an open field of half square meter was divided into a series of squares each alternatively colored black and white. The apparatus had a 40 cm height wall. The number of squares crossed, number of center squares crossed and rearing shown by the animals was counted for 5 mins, after 30 mins of drug administration by i.p route^{12, 13}.

Depressant activity by using open field test

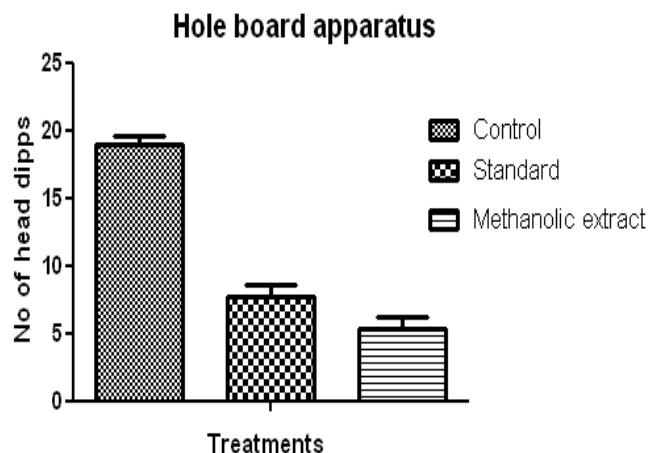


One way ANOVA followed by Dunnett's Multiple Comparison Test. Control vs Standard p value not significant, Control vs Methanolic extract p value not significant

Hole-board test:

The apparatus used was a white painted wooden board (60 cm × 30 cm) with 16 evenly spaced holes (1 cm diameter × 2 cm depth). Mice were divided into three groups (n = 3). The first group was treated with normal saline (0.9 % 5ml/kg), while the second, group were treated with 100 mg of methanolic extract of *Typha*

angustata per kg bodyweight respectively. The third group received diazepam (1mg/kg). All treatment was by intra peritoneal route. Each mouse was placed at a corner of the board after 30 min of drug treatment, and the number of head dips on the hole was counted for 5 min period. The methanolic extract of *Typha angustata* was shown decreased head dipping when compared to the other treatment groups ^{14, 15}.



One way ANOVA followed by Dunnett's Multiple Comparison Test
Control vs Standard ($p < 0.001$), Control vs Methanolic extract
($p < 0.001$)

Statistical analysis:

The values are expressed as Mean \pm SEM. The results were analyzed for statistical significance using one way ANOVA followed by multiple comparisons by Dunnett's test.

3. CONCLUSION:

In the present investigation, *Typha angustata* has shown significant depressant activity in mice when compared to other treatment groups.

4. ACKNOWLEDGMENT

The authors are thankful to Chalapathi Educational Society and Prof. Rama Rao Nadendla Principal, Chalapathi Institute of Pharmaceutical Sciences, Guntur for their support.

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