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Exploring the Antidepressants Activity in *Barringtonia Racemosa* Seeds

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Abstract

Barringtonia racemosa is a tropical higher plant and is a member of the *Lecythidaceae* family. *Barringtonia Racemosa* is a moderate sized evergreen tree found in the West Coast of India, Sundarbans, Karnataka, Assam and Andaman Islands and Malaysia. In this work, the effects of methanolic extract of seeds of *Barringtonia Racemosa* (BR) were evaluated in Wistar albino mice using behavioral tests sensitive to clinically effective antidepressant compounds. The extract (250,500mg/kg), administered intraperitoneally, was able to decrease the immobility time of mice dose-dependently when subjected to both tail suspension and forced swim tests and the effects are comparable to that of standard drugs i.e., Imipramine (10mg/kg). These results demonstrated that BR had specifically antidepressant effects in vivo. In conclusion, the present study suggested that BR extracts possessed potential antidepressant effects which could be of therapeutic interest for using in the treatment of patients with depressive disorders.

Key words: *Barringtonia racemosa*, Anti-depressant activity, Seeds

Introduction

Depression can be devastating for those who have it and also for their families. Fortunately, with early detection, diagnosis and a treatment plan consisting of medication, psychotherapy and healthy lifestyle choices, many people can and do get better. People of all ages and all racial, ethnic and socioeconomic backgrounds experience depression. Antidepressants work by balancing brain neurotransmitters level to ease depression. Generally speaking, it takes about 2 weeks for the drugs to start working and about 6-9 months for the whole therapy, or depend on the severity of illness as some people will need to take them longer but also come with some serious side effects. So we need to discover some natural and traditional drugs. *Barringtonia racemosa* is a tropical higher plant and is a member of the *Lecythidaceae* family. *Barringtonia Racemosa* is a moderate sized evergreen tree found in the West Coast of India, Sundarbans, Assam and Andaman Islands and Malaysia (Khan and Omoloso, 2002). It is used as a traditional medicine in Malaysia and locally known as putat. Its fruits are used to treat cough, asthma and diarrhea; the seeds are aromatic and useful in treating colic and ophthalmic problems (Kong et al., 2012).

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Barringtonia Racemosa well known in Malaysia as a traditional medicine has been shown to exhibit anti-oxidant and anti-inflammatory effects. In the recent past, there has been an increase in the use of plants as sources of natural anti-oxidants for the scavenging of free radicals antidepressant analyses of *Barringtonia Racemosa* using behavioral model has never been conducted and information obtained from such study can provide useful data particularly with regards to their ability to protect patient. This study investigates the effects of the methanolic extracts of *Barringtonia Racemosa* seeds on the antidepressant.

Material and Method

Procurement of the plant parts

The seed of the *Barringtonia racemosa* will collect from the Anant Jain beej bhandar, chavani chouraha, Indore, (M.P.).

Preparation of extract

The seed will washes with the water and keeps it for drying for 2 hours. The collected plant seed will made dried by fan aemiceion in shade. The air dried plant material will then grinded to reduce them into coarse powder with the help of a suitable grinder. The powder will then subject to extraction with methanol cool maceration method.

Phytochemical evaluation

The phytochemical evaluation of methanolic extract of *Barringtonia Racemosa* seed will carried out as per standard methods. The presence of flavonoids will determined by lead acetate test, tannins by acetic

acid test, saponins by foam test and steroids will determine.

Animals

Wistar albino mice, weighing 150-180g procured from CPCSEA registered source. They should be kept in polypropylene cages under standard light/dark cycle, with food and water provided ad libitum. The experiments will perform between 09:00 and 16:00 h. The experimental protocols will approve by the Institutional Animal Ethics Committee and conducted according to the guidelines of Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), New Delhi, India.

Chemicals

Imipramine hydrochloride was used as reference standards for antidepressant activity, Methanol, normal saline solution.

EXPERIMENTAL PROTOCOLS

Overnight fasted animals were selected randomly on the day of experiment for administration of vehicle, standard drug and study drug. The animals were acclimatized one hour before for behavioural tests. Thirty minutes and 1 hour time interval between drug administration and behavioural tests were maintained in case of intraperitoneally and oral administrations respectively. The animals were divided into four groups of four animals each as follows:

Group I (n=4) -Control, received normal saline, i.p.

Group II(n=4) - Standard, Imipramine,10mg/kg

Group III (n=4) – BRMSE,250mg/kg, i.p.

Group IV (n=4) – BRMSE, 500mg/kg, i.p.

BEHAVIORAL TESTS

Forced swim test (FST)-It is the most frequently used behavioural model for screening antidepressant-like activity in rodents. Mice were individually forced to swim in open glass chamber (25 ×15 × 25cm) containing fresh water to a height of 15 cm and maintained at 26°±1°C. At this height of water, animals were not able to support themselves

by touching the bottom or the side walls of the chamber with their hind-paws or tail. Water in the chamber will changed after subjecting each animal to FST because “used water” has been shown to alter the behaviour. Each animal showed vigorous movement during initial 2 min period of the test. The duration of immobility will manually recorded during the next 4 min of the total 6 min testing period. Mice were considered to be immobile when they ceased struggling and remained floating motionless in water, making only those movements necessary to keep their head above water. Following swimming session, mice were towel dried and returned to their housing conditions.

Tail suspension test (TST)

All the mice of either sex will divide in four different groups. The first group assigned as control receiving only vehicle (NaCl 2ml/kg). The other two groups received acute dose of ext., fraction (250, 500 mg/kg). The fourth group received standard drug Imipramine. The total duration of immobility induced by tail suspension will measured according to the methods. Briefly, mice acoustically and visually isolated will suspend 50 cm above the floor by adhesive tape place approximately 1 cm from the tip of the tail. Immobility time will record during a 6-min period. Mice will consider immobile only when they hung passively and will motionless.

STATISTICAL ANALYSIS

All the data represent mean±S.E.M. values. The data were analyzed by means of analysis of variance (ANOVA). Whenever ANOVA was significant, further multiple comparisons were made using Tukey's test as the post hoc test. All analyses were performed using the SPSS statistical software. The levels of statistical significance ranged from p<0.05 to p<0.001.

Results and Conclusion

Table 1: Phytochemical constituents of methanolic extract of *Barringtonia Racemosa*:

S.NO.	Phytochemical constituents	Methanolic extract of BR
1.	Alkaloids	+
2.	Flavonoids	+
3.	Phenols	+
4.	Glycosides	+
5.	Saponins	-
6.	Steroids	+
7.	Carbohydrates	+
8.	Terpinoids	+
9.	Proteins And Amino Acids	+

Table 2: Effect of BRMSE on immobility period of mice using FST:

Group	Drug	Dose	Immobility period(secs)
1	NORMA SALINE	2ml/kg,i.p.	176±3.25
2	IMIPRAMINE	10mg/kg,i.p.	120±1.75
3	BRMSE (test)	250mg/kg	147±1.8
4	BRMSE(test)	30mg/kg	133±2.5

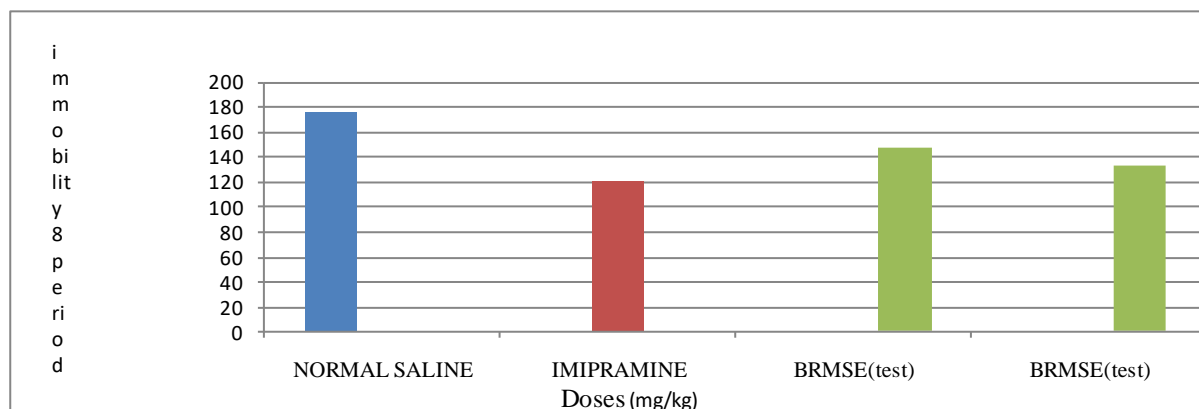
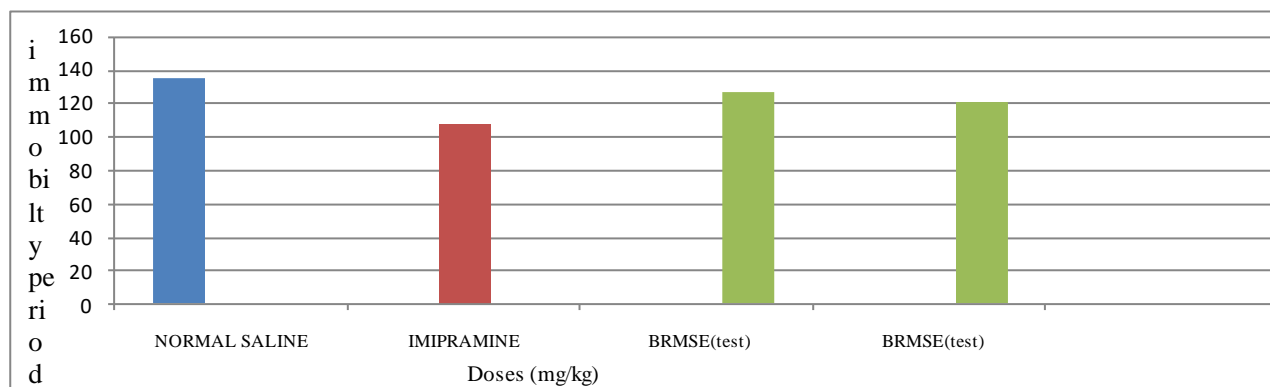


Table: Effect of BRMSE on immobility period of mice using TST

Group	Drug	Dose	Immobility period(secs)
1	NORMALSALINE	2ml/kg,i.p.	135
2	IMIPRAMINE	10mg/kg,i.p.	108
3	BRMSE(test)	500mg/kg	127
4	BRMSE(test)	250mg/kg	120



Conclusion

Hence *Barringtonia Racemosa* seeds extract possesses antidepressant effect in animal models of

depression which was comparable to that of Imipramine as demonstrated in this study. The phytochemical examination, departure of active

ingredients and further investigation in this line is essential to establish its therapeutic benefits

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