Research Article **ISSN: 0976-7126**
CODEN (USA): IJPLCP **Miryala *et al.*, 13(6):1-4, 2022**

International Journal of Pharmacy & Life Sciences
Open Access to Researcher

Evaluation of Antidepressant activity of *Crossandra infundibuliformis*

Ramya Miryala[1]*, Prashanti Chitrapu[1] and Aarti Dubey[2]

1, Vision College of Pharmaceutical Sciences and Research, Hyderabad, (A.P.) – India

2, Faculty of Pharmacy, Mansarovar Global University, Sehore, (M.P.) - India

Article info

Received: 12/05/2022

Revised: 22/05/2022

Accepted: 20/06/2022

© IJPLS

www.ijplsjournal.com

Abstract

As per report 21% of world's population has been affected by depressive disorder which is a prevalent psychiatric disorder. The presently using drugs can impose a variety of side-effects including cardiac toxicity, hypopiesia, sexual dysfunction, body weight gain, and sleep disorder. During the last decade, there is a growing interest in the therapeutic effects of natural products on mental disorders. Antidepressant activity of extract of *Crossandra infundibuliformis* was investigated by using Forced swimming test (FST) and Tail suspension test (TST) models. Imipramine were used as reference standards. It has been observed from our study that extract showed significant reduction in immobility in tail suspension and forced swim model of depression.

Key words: *Crossandra infundibuliformis*, FST, TST

Introduction

Depression is the most common of the affective disorders (defined as disorders of mood rather than disturbances of thought or cognition); it may range from a very mild condition bordering on normality to severe (psychotic) accompanied by hallucinations and delusions. Worldwide, depression is a major cause of disability and premature death. In addition to the significant suicide risk, depressed individuals are more likely to die from other causes, such as heart disease or cancer. [1-2] *Crossandra infundibuliformis*, commonly called firecracker flower, is native to India and Sri Lanka. It is a tropical evergreen subshrub that grows 1-3' tall. Features apricot to salmonpink flowers in terminal racemes. Yellow and redflowered forms are also available. Blooms throughout the year (everblooming). Ovate to lanceolate shiny dark green leaves. [4]

***Corresponding Author**

Material and Method

Extract of *Crossandra infundibuliformis* was taken for the present investigation.

Antidepressant Activity [5-6]

Forced Swim Test (FST)

According to the FST method described by Porsolt et al., the mice were placed individually into 5 L glass beakers filled with 15 cm height of water. The water was changed frequently to eliminate fur, urine, and excrement after each test was done. When the mice remained floating in the water without struggling, making only minimum movements of its limbs necessary to keep its head above the water surface, they were considered to be immobile. This was classified as induced depression. The total duration of immobility was recorded during 5-minute test. The immobility period was calculated by subtracting total time (5 minutes) from time spent in escaping behaviour

such as swimming and climbing. Swimming was defined as movements throughout the glass beaker and climbing was considered as upward directed movements of forepaws by the side of glass beaker. Antidepressant drug treatment reduced the length of time the animals remain immobile and increased the escaping behavior.

S.no	Groups	DOSE(oral)
1	Control	saline
2	Negative control	Vehicle (DMSO)
3	Standard(imipramine)	10mg/Kg
4	Test1	Test1(10mg/Kg)
5	Test2	Test2(10mg/Kg)
6	Test3	Test3(10mg/Kg)
7	Test4	Test4(10mg/Kg)
8	Test5	Test5(10mg/Kg)
9	Test6	Test6(10mg/Kg)
10	Test7	Test7(10mg/Kg)
11	Test8	Test8(10mg/Kg)
12	Test9	Test9(10mg/Kg)
13	Test10	Test10(10mg/Kg)
14	Test11	Test11(10mg/Kg)
15	Test12	Test12(10mg/Kg)

Tail-Suspension Test

The tail-suspension test is a mouse behavioral test useful in the screening of potential antidepressant drugs, and assessing of other manipulations that are expected to affect depression related behaviors. Mice are suspended by their tails with tape, in such a position that it cannot escape or hold on to nearby surfaces. During this test, typically six minutes in duration, the resulting escape oriented behaviors are quantified. The tail-suspension test is a valuable tool in drug discovery for high-throughput screening of prospective antidepressant compounds. Here, we describe the details required for implementation of this test with additional emphasis on potential problems that may occur and how to avoid them. We also offer a solution to the tail climbing behavior, a common problem that renders this test useless in some mouse strains, such as the widely used C57BL/6. Specifically, we prevent tail climbing behaviors by passing mouse tails through a small plastic cylinder prior to suspension.

Locomotor Activity

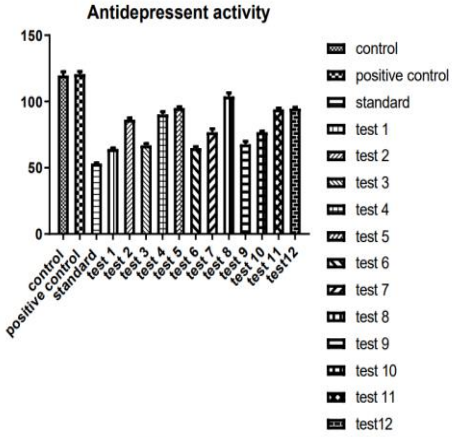
Open field test Motor activity was quantified in four Plexiglas open field boxes 43 × 43 cm2 . Two sets of 16 pulse-modulated infrared photobeams were placed on opposite walls 2.5-cm apart to record x–y ambulatory movements. Activity chambers were computer interfaced for data sampling at 100-ms resolution. The computer defined grid lines that divided each open field into center and surround regions, with each of four lines being 11 cm from each wall. Dependent measures were the number of entries into the center, the distance travelled in the center, total time spent in the center, and distance travelled in the center divided by total distance traveled. Overall motor activity was quantified as the total distance traveled (cm).

Results and Discussion

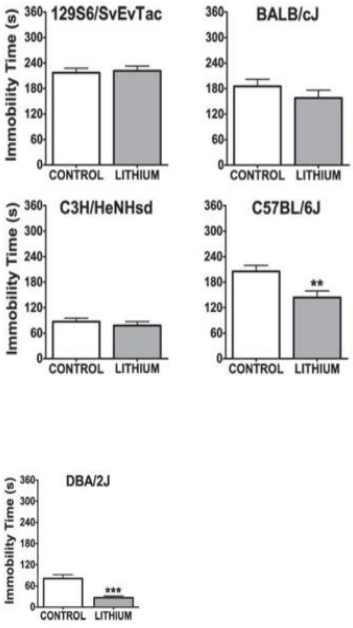
Animals treated with standard (imipramine) and test compounds shown duration of immobility was significantly reduced in forced swim test model.

s.no	Groups	Acute force swim test Immobility in seconds Mean±SEM
1	Control	119±2.8
2	Negative control	120±2
3	Standard(imipramine)	53±0.5***
4	Test1	64±0.9***
5	Test2	86.33±1.2***
6	Test3	66.8±1.3***
7	Test4	90.1±2.1***
8	Test5	95±1.0***
9	Test6	64.83±1.07***
10	Test7	76.83±2.6***
11	Test8	103.8±2.7***
12	Test9	67.66±2.29***
13	Test10	76.83±0.74***
14	Test11	94±1.0***
15	Test12	94±1.0***

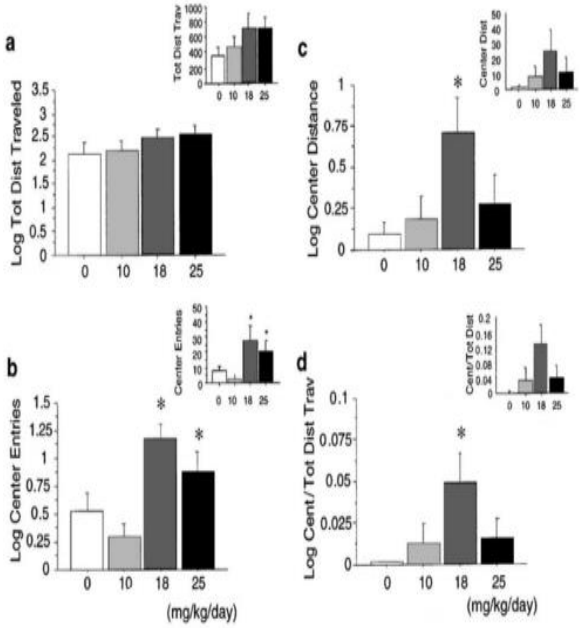
All the results were presented Mean ± SEM and P*** < 0.05, were considered significant, all the groups were compared with control data was analysed by one way ANOVA, followed by Dunnett's post hoc test using GraphPad prism version 5.0.



The TST to assess antidepressant-like responses to lithium treatment in various mouse strains.



BALB/c mice treated chronically with Imipramine were tested in the open field for 30 min. As in the strain comparison study, Imipramine did not alter total locomotor activity in BALB/c mice (F(3,56)=1.36, P=0.27). However, for the log of center entries (F(3,56)=6.85. Imipramine exhibited significantly higher values than controls. For the log of center entries, mice treated with 10 mg/kg/day Imipramine also exhibited lower values than groups receiving 18 and 25 mg/kg/day. Although the same trend was observed, there was no significant effect of drug on log of time in the center. Even without logarithmic transformation, mice treated with 18 mg/kg/day Imipramine made more center entries (F(3,56)=3.07, and showed a trend for higher center/total distance values (F(3,56)=2.51, P=0.07) than controls while total locomotor activity remain unaffected by all doses of drug (F(3,56)=0.86, P=0.47). BALB/c mice treated subchronically (one day) with Imipramine showed no differences in any measures in the open field, whether data were analyzed untransformed, or following logarithmic transformation.



Open field test. Log transformed data for open field measures are shown for BALB/c mice receiving 0, 10, 18, and 25 mg/kg/day chronic Imipramine (*n*=15 per group). Log of total locomotor activity (a), log of the distance traveled in the center (b), log of entries into the center (c), and the log of center/total distance traveled (d) are shown in cm. Untransformed data are shown in insets. Values are means±SEM. $^{*}P<0.05$ *vs* control group with ANOVA.

Conclusion

All the test compounds shown significant effect when compared to control for anti-depressant activity.

References

1. Wong, M., Licinio, J (2001). Research and treatment approaches to depression. *Nat. Rev, Neurosci.* 2:343–351.
2. Willner, P (1984). The validity of animal models of depression. *Psychopharmacology (Berl)* 83:1–16.
3. Zhang, Z (2004). Therapeutic effects of herbal extracts and constituents in animal models of psychiatric disorders. *Life Sci.* 75, 1659–1699.
4. https://indiabiodiversity.org/species/show/229384
5. Priyanka, B., Sridhar, Y., Shankaraiah, P (2012). Antidepressant and muscle relaxant activity of Cardiospermum halicacabum Linn. Roots in mice. *J. Advanced Pharmaceutical Sciences.* 2(1):193–200.
6. Noldner, M., Schotz, K (2002). Rutin is essential for the antidepressant activity of Hypericum perforatum extracts in the forced swimming test. *Planta Med.* 68, 577–580.

Cite this article as:
Miryala R., Chitrapu P and Dubey A. (2022). Evaluation of Antidepressant activity of *Crossandra infundibuliformis*. *Int. J. of Pharm. & Life Sci.*, 13(6): 1-4.

Source of Support: Nil
Conflict of Interest: Not declared
For reprints contact: ijplsjournal@gmail.com