



The comparative effect of hydro alcoholic extract of passion flower and fluoxetine on depression symptoms in mice by the tail suspension test

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ABSTRACT

The present study was to compare the effect of passion flower's extract and fluoxetine on depression symptoms in mice using Tail suspension test. In this empirical study, number of 50 mature mice (weight range of 25 to 30 gr) was used in five groups. Depression symptoms were observed in four groups, after injection of 25 mg/ kg tetrabenazine. Three groups has been received 50, 100 and 200 mg/ kg hydro alcoholic extract of passion flowers as for rat's weight via intraperitoneal injection. Group four has been received 1.4 mg/kg fluoxetine, while group five as control ones received no treatment. The Tail suspension test was used to assess depression mood, and increase in the movement time to second and decrease of time to moveless assigned as an index for depression. The SPSS software was used for analyzing collected data. Compare to control group and fluoxetine, hydro alcoholic extract of passion flower's with concentration of 50 and 100 mg/kg of mice weight has been significantly increased time of movement and decreased time of moveless in samples; and these all shows depression mood. The results of this study suggest that 50 and 100 mg/kg hydro alcoholic extract of passion flower can be an appropriate alternative for fluoxetine to decrease depression symptoms ($p < 0.05$).

Key words: depression, fluoxetine, passion flower's, Tail suspension test

INTRODUCTION

Mood disorders comprise wide range of psychological disorders. Temper is an emotional mood or permanent predominant excitation that effects on behavior and percipience of person from the world. Mood disorders sometimes called as emotional disorders. Everyone may experience depression at any stage of his or her life. Body and psychical health, felling and behavior can be impressed by depression [1].

Depression is a common and dangerous disease in the world that via making disability can effect on person's life and behavior. Leaving family and friends, losing motivation, disorders in sexual tendency, insomnia (at 75% of cases), depressed temper and missing enjoyment all is key symptoms of depression [2]. Disorders associated with depression are one of the commonest psychological disorders with 10-15 and 5-12% of women and men, respectively. Playdown to treat these disorders can case psycho damages and also social and economic complications for patients. Different drugs have been used to treat this disorder that majority of them are based on modulation of the brain neurotransmitters, especially serotonin, norepinephrine and dopamine [3].

Anti-depression drugs categorized in the class of selective serotonin reuptake inhibitors (SSRI) and are new for resolving depression problem; these drugs are the first line of depression treatment [4]. Serotonin is one of the most important materials that lead to transfer stimulus and neuro massages, and in fact is a natural substance that produced by the brain and has anti-depression calmative properties. So, decrease in serotonin levels in the body leads to creation of depression, anxious and insomnia. Fluoxetine carry out its role via affecting on the serotonin

level and, physiologically, is selective serotonin reuptake inhibitor at the end of neurons that can increase serotonin levels out of cells. It was widely used as an anti-depression drug [3].

Fluoxetine may have some side effects such as adnauseam, headache, anxiety, insomnia and sexual disorders. Dyskinesia, dystonia and paroxysm are extra pyramidal effects with extra consumption of fluoxetine in the early stages of treatment. Deprivation syndrome is related to SSRI drugs and recognizes by some symptoms such as adnauseam, vertigo, anxiety, tremblement and heartthrob [5]. Consuming other drugs during depression treatment can help to increase effectiveness and decreasing over need to these drugs [6].

Research for finding effective drugs with low side effects has attracted a large amount of media attention in recent years. Medical plants are one of the existent options for deal with some illnesses. Since effective material in the medical plants in associated with other substances are at biological balance, so cannot accumulate in the body and has no side effects, and hence has significant dominant than other chemical ones [7].

Passion flower (*Passiflora incarnate*) is a perennial plant with 8-9 m woody ascending stem that mounting up with aid of tendrils and peripheral backrests [8]. Finding seeds belong to several thousand years ago from antiquarian regions of Virginia and North America shows the antiquity of using this plant and its products by flathead people. Farsder Mississippi introduced it as medical science at 1804, and gained double attention by Gous in Al Jadida, Georgia. An experimental study on the herbal calmatives in Britain at 1986 recommended passion flower as the most consumed species used for treatment some disorders [9].

EXPERIMENTAL SECTION

In this study, number of 50 mature mice (weight range of 25 to 30 gr) was used in five groups and there was 10 mice in each ones. Mice kept in controlled room in light of temperature and humidity for 24 hours and all received enough amount of food and water. The time of experiment was between 9 am to 18 pm and laboratory condition was equal for all subjects. Group one, as a control, comprises all subjects without injection of any drug or substance. Group two comprises all subjects with 1.4 mg/kg fluoxetine. Three remained groups comprise subjects with 50, 100 and 200 mg/kg of passion flower's extract, respectively. Extraction phase carry out after degrading washed plant samples and grinding them to create powdery ones; 100 gr of powdered samples weighted using digital scale, poured into sterile flesh and then suspend with adding 400 cc of alcohol ethylic.

Suspend samples sealed off and kept in the cool place for 72 hours; after three days, components of flesh shaken for five minutes using shaker and then Watman paper used for purification of extraction; thus, the weight of this paper determined using digital scale; obtained mixture crossed through this paper and pure sample poured into new sterile flesh. Remained powders heated using heater at 50 degree of centigrade for 1.5 hours and dried powders weighted using digital scale. Related calculations carry out to reach for appropriate dose. Stock extraction was used to obtain pre-determined concentrations; so, concentrations of 50, 100 and 200 mg/kg prepared for each extraction.

The suspension tail test was carried out using two metallic 70 cm bases. There is a 50 cm rope that fixed between these two metallic bases. Rat's tail fixed using a clasped rope. The test began with extreme movement activity of rat. After a few minutes, rat was quite moveless, inactive and without any reaction. The time of moveless recorded for four minutes using chronometer. Total time of the suspension tail test was six minutes; times of move less during the test were recorded [10].

RESULTS AND DISCUSSION

The effect of hydro alcoholic extract of passion flower and fluoxetine on depression symptoms during movement and moveless time in the tail suspension test

The results of this study showed that prescription of 50 and 100 mg/kg extracts leads to increase movement and decrease move less time in subjects (Figure 1 and 2).

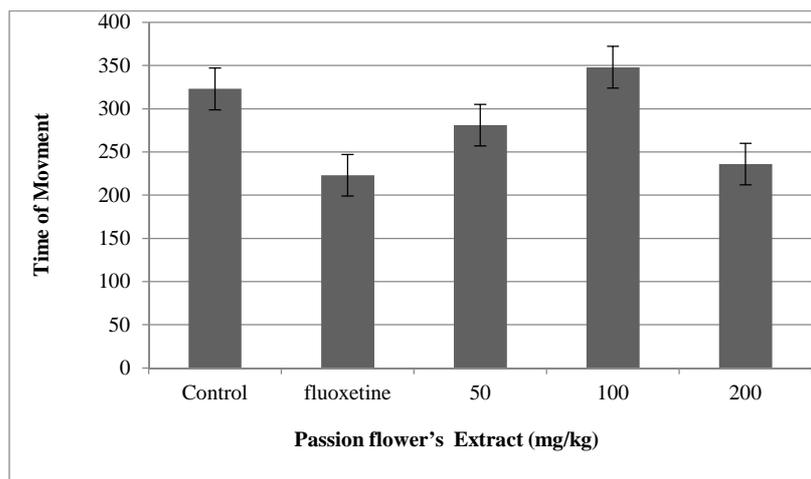


Fig 1: Time of movement in second at the tail suspension test in all groups

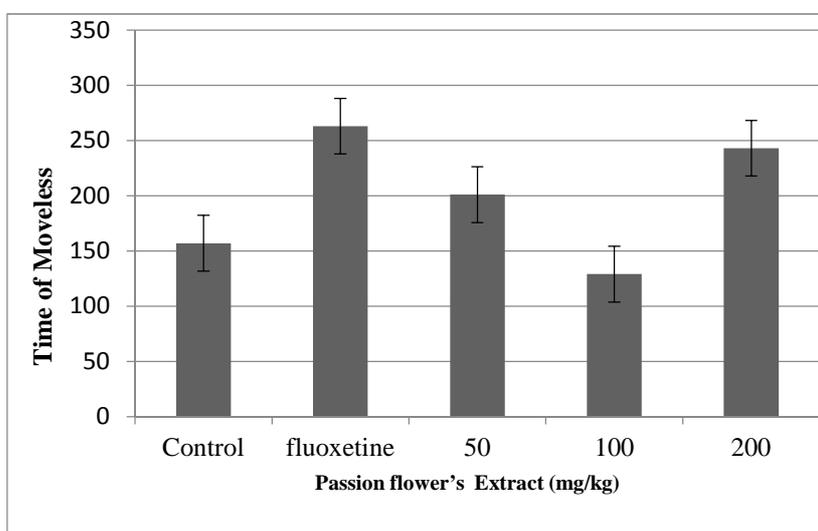


Fig 2: Time of moveless in second at the tail suspension test in all groups

The present study was to investigate the comparative effect of hydro alcoholic extract of passion flower on depression symptoms in tiny laboratory rat. The results of this study showed that hydro alcoholic extract of this plant at the concentrations of 50 and 100 mg/kg of body weight can decrease depression in subjects and this effectiveness is comparable with the effect of fluoxetine. In pathology, decrease in function of some neurotransmitters such as serotonin, epinephrine and dopamine leads to depression and almost all chemical drugs with anti-depression properties increase function of at least one of these chemical messengers [11].

The results of this study showed that the hydro alcoholic extract of passion flower can increase the activity of at least one of the neurotransmitters that involves in depression such as serotonin, epinephrine and dopamine. There was a little research on dose-dependent extract of passion flower on depression symptoms and this study shows that extract of this plant can reduce symptom severity in patients. Previous studies also shows anti-anxiety effect of passion flower compared to diazepam in female laboratory rat [12].

Until the present time no study have been done on the dose-dependent anti-depression effects of passion flower compared to a synthetic drugs. There is no clear description with this matter that what components are in the extract of passion flower that can decrease depression severity. Previous researchers have shown that there is some amount of flavonoid in this extract and it may react with dopamine receptors and inhibit them and thus can decrease depression symptoms in patients [11].

It should be said that dopamine receptors placed pre-synaptic on the dopamine terminals and inhibition of them leads to releasing dopamine as an effective neurotransmitter that can decrease depression severity [13]. In order to better understand of the effect of this extract, the investigation of interaction between extract and dopamine system

can be suggested. At the other hand, studies on passion flower's and component in its stem, leaf, flower and overhead organs showed that there is a large amount of flavonoid and alkaloid in this plant [10]. Based on these results, the investigation of passion flower in light of existence of other substances that may have anti-depression properties seems to be necessary.

CONCLUSION

In conclusion, depression as a commonest disorder has economic, emotional and social costs for patients and their families. It was estimated that 12 months procedure rate of this disorder is about 2.9 to 12.6% [14]. It seems that 50 and 100 mg/kg hydro alcoholic extract of passion flower. Compared with fluoxetine, can significantly decrease depression symptoms in tiny laboratory rat and it means that this study can be as a guide for finding similar anti-depression drugs with plant origin. In this study, the effect of hydro alcoholic extract of passion flower's was assessed and according to the results, the investigation of hydro and hydro alcoholic extract of this plant and comparison of related results with the results of this study can be suggested. Chronic effects of this extract can also be assessed in future. Based on effectiveness of this extract on reducing depression, it can be suggest that its components be separate using phytochemical methods and the effective part of extract be used for preparation of better drugs.

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