



The feasibility of replacing diazepam with passion flower's extract for reducing anxiety

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ABSTRACT

Current study was carried out to compare the effects of passion flower hydroalcoholic extract and diazepam on reducing anxiety behaviors of laboratory mice. 60 mature mice from the weight range of 25-30 g were used. Treatment groups were Control, Stress, diazepam, and 50,100 and 200 mg/kg of extract. To enforce the anxiety, mice were placed in a dark box for thirty minutes. After that, each mouse was located in a plus elevated maze and its behavior was recorded. Obtained data were analyzed using SPSS program. Hydroalcoholic extract decreased the presence time of animals in maze arm in 100 and 200 mg groups which indicates the anxiety reduction of these doses. According to results, the extract had anxiety reducing results similar to diazepam dose dependently.

Keywords: passion flower, anxiety, diazepam, plus elevated maze, mice

INTRODUCTION

The term anxiety was used first in 1930 in Freud writings and from then on it became common. Most psychologists state that anxiety is different from fear slightly [1].

Some researchers know anxiety an inferential structure as intelligence which is measured based on subjective reports, avoidance behavior and physiological symptoms. But there is no consensus about the methods of evaluating anxiety signs and how they appear in different people [2].

Anxiety is a state of worry caused by the psychological pressure and is accompanied with palpitations, indigestion, lack of concentration and impaired thinking. Anxiety disorders are from the most usual psychotic disorders. Studies have shown that at least one of every four person has diagnostic criteria for at least one anxiety disorder. Twelve-month prevalence rate of these disorders is 17.7%. Women with 30.5% lifetime prevalence have more chance to evolve in anxiety disorders compared to men with a lifetime prevalence of 19.2% [3].

Many chemical drugs are used in anxiety and sleep disorders which often have side effects. For example, benzodiazepines cause addiction and quitting those leads to drug withdrawal syndrome [4]. Benzodiazepines have quick anti-anxiety sedative effect and are used for immediate treatment of insomnia, acute anxiety, and restlessness and anxiety caused by any type of psychiatric disorder [3].

These drugs have short, medium, or long-acting effects. Short and medium effects of benzodiazepines are preferred for insomnia treatment and long term effects are used to treat anxiety [5]. Benzodiazepines are tranquilizing drugs which reduce the activity of special brain parts and exert a sedative effect. One of these drugs is diazepam (valium) as a sedative and hypnotic drug which is located in long acting benzodiazepines. Diazepam is prescribed for anxiety relief, sleep disorders and panic disorder. It is also used as skeletal muscle relaxant and anticonvulsant and muscle

contraction treatment. Benzodiazepine withdrawal syndrome has symptoms of anxiety, insomnia, irritability, tremors and seizures [6].

Passion flower contains indole alkaloids (harman, harmon, harmine and harmaline), flavonoids (orientin, isoorientin, vitexin, isovitexin), glycosides, phenolic compounds, sterols and volatile components as main compounds of plant [7]. This plant has anxiolytic, anticonvulsant properties and is used in curing insomnia, neurasthenia and hysteria. It has sedative, anti-spasmodic properties and is used for neurasthenia treatment.

Flavonoids are in charge of medicinal activities of plant and aquatic extract of this plant has anxiolytic activity. Also, Passion flower has flavonoidcrisine which has anti-oxidation, anti-anxiety activity [8].

Considering the mentioned subjects and lack of scientific studies about comparing this plant with diazepam, current study was carried out to compare the effects of passion flower hydroalcoholic extract and diazepam on reducing anxiety behaviors of laboratory mice.

MATERIALS AND METHODS

Sixty female mature mice from the weight range of 25-30 g were used. Mice were kept in a temperature-humidity controlled room with 12:12 light period. Samples had free access to food and water.

Treatments were:

- Control: without any anxiety or drugs
- Anxiety: anxiety was enforced by black box but no injection was done
- Diazepam: after enforcing the anxiety, received 1.2 mg/kg of diazepam
- Three experimental groups: received 50, 100, and 200 mg/kg doses of extract in peritoneum.

The anxiety was assessed using elevated plus-maze. This apparatus is made from wood and includes two open arms with dimensions of 10×50cm dimensions and two closed arms with dimensions of 40×50×10cm dimensions. Open arms and also closed arms were opposite and apparatus was placed about 50 cm above the floor.

This model is experience model and doesn't need any training. The apparatus is designed according to two instincts: curiosity of rodents and avoiding from bright, open environments. Animal has willing to stay in closed arms. Increase in ratio of entrance and staying in open arms plus lack of changes in movement activities show reduced anxiety in this test. Open arms Entrance ratio is less sensitive than spent time ratio for recording anxiety/ anti-anxiety behaviors of animal.

Obtained data were analyzed using SPSS program from both descriptive and inferential aspects. In descriptive part average and standard error of variables were calculated and in inferential part one way analysis of variance was used and Duncan test was used to compare means.

RESULTS AND DISCUSSION

The anxiety was assessed using elevated plus-maze. Increase in ratio of entrance and staying in open arms plus lack of changes in movement activities show reduced anxiety in this test. Open arms Entrance ratio is less sensitive than spent time ratio for recording anxiety/ anti-anxiety behaviors of animal. Results are presented in figure 1 to 3.

Hydro-alcoholic extract of Passion flower in definite dose was an effective cure for reducing anxiety of little laboratory mice. There is no similar study about comparing the effects of Passion flower's extract and diazepam on reducing mice anxiety. Results showed that 100 and 200 mg/kg doses increased the spent time in open arms which is counted as an indicator of anxiety reduction. Also, 50 and 200 mg/kg doses increased the movement activity of animals.

Judgment about significant differences between anxiety levels was done as follows: simultaneous increase or decrease in both indices of entrance to open arms and spent time there and significant difference between at least one of them and control group was count as significant variation. Therefore, considering no difference of groups in entrance ratio we can conclude that this plant has anti anxiety effects and reduces anxiety reactions. According to results of anxiety test, average spent time in open arms of 100 and 200 mg/kg groups were significantly higher than stress groups and were similar to control and diazepam groups. This is an agreement with previous studies. Vazirian *et al.* (2011) in a clinical double-blind test studied the effects of passion flower drops on generalized anxiety disorder and showed that passion flower was an effective treatment [9]. This plant has been approved as a treatment for restless. Animal studies have shown that the extract of this plant can adjust the sleep-wake ratio [10].

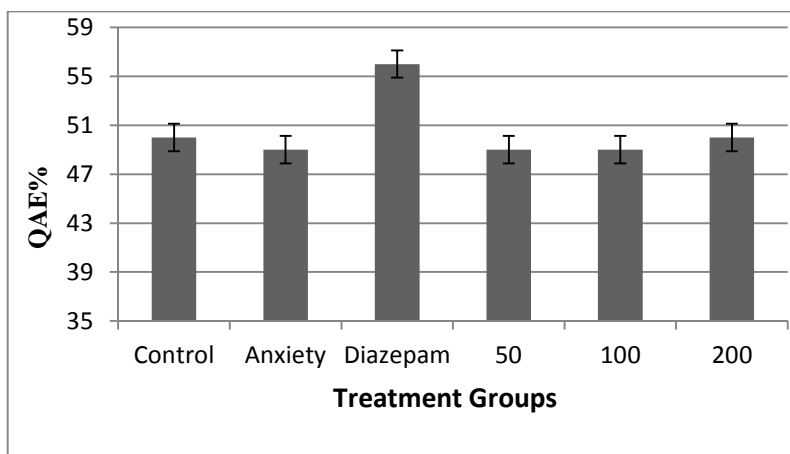


Fig 1: Percentage of open arm entries (OAE %) in all Groups

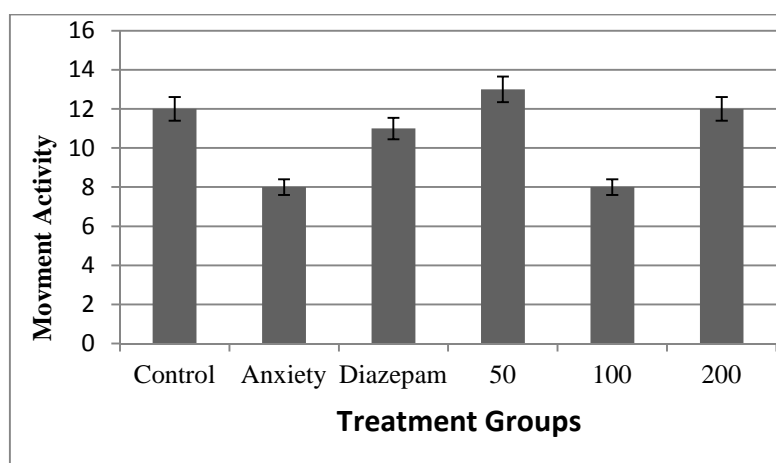


Fig 2: Movement activity in all Groups

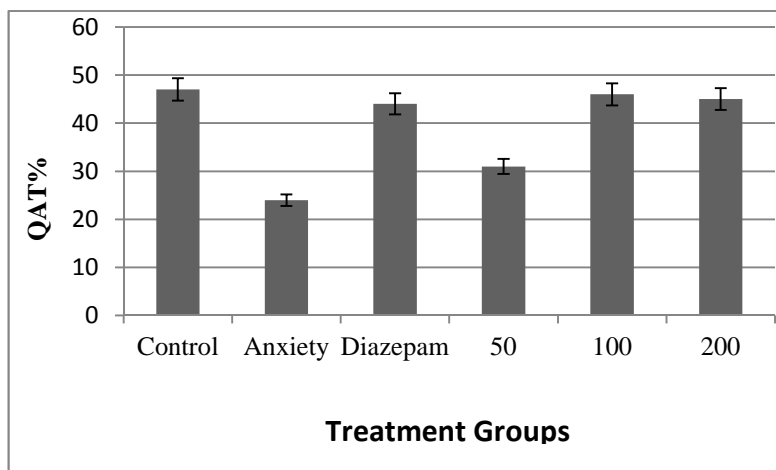


Fig.3: Time of animal presence in open arms percentage (QAT %) in All Groups

Hydroalcoholic extract 100 and 200 mg/kg doses increased the spent time in open arms which shows anxiety reduction. Also, 50 and 200 mg/kg doses increased the movement activity significantly in proportion to stress group.

CONCLUSION

In view of effective result of extract in mentioned doses, this method is advised for people who suffer from anxiety and Food and Drug Administration is recommended to support this method to prepare a good environment for increasing anxiety treatment quality.

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