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Research Paper

Psoralia Corylifolia Linn.'S Anticonvulsant Properties In Ptz-Induced Mice Model

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ABSTRACT:
Objective: *To investigate into Psoralia corylifolia Linn's extract's anticonvulsant properties. PTZ (Pentylenetetrazole) treated leaves gave Swiss albino mice convulsions.*
Material and method: *The anticonvulsant properties of Psoralia corylifolia Linn. leaf extract (120 mg/kg and 60 mg/kg i.p.) were investigated in Swiss albino mice who were experiencing PTZ-induced seizures. The cessation of convulsions was seen in PTZ seizures.*
Result: *Psoralia corylifolia Linn. leaf extract (120 mg/kg and 60 mg/kg, i.p.) considerably ($p<0.005$) shielded the mice against tonic convulsions caused by PTZ.*
Conclusion: *Given that PTZ-induced seizures were eliminated, the findings indicates that the Psoralia corylifolia Linn. leaf extract may have an anticonvulsant effect through a variety of mechanisms.*
Keywords: *Anticonvulsant, Pentylenetetrazole, Psoralia corylifolia linn., Swiss albino mice.*

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I. INTRODUCTION

Epilepsy is a serious neurological illness that affects about 70 million people worldwide. In high-income countries, the condition's incidence rate can reach 50 per 100,000 individuals annually. 100 per 100,000 people per year in poor countries [1]. Epilepsy continues to be a highly stigmatized condition that places a significant strain on patients, health systems, and their families alike.[2]

As its name suggests, epilepsy is exactly what it sounds like; it is also known as "chronic seizure disorder." The afflicted person experiences frequent, unprovoked seizures as a characteristic of this condition [3] A variety of seizures, including tonic, clonic, and absence seizures, will be experienced by many afflicted people. Temporary loss of awareness or consciousness is the hallmark of absence seizures, but uncontrollably jerky movements are the hallmark of tonic, clonic, and tonic-clonic seizures. Seizures classified as tonic occur when the body's muscles contract and become rigid. When tonic-clonic seizures coexist, they are referred to as grand mal seizures.[4,5] Numerous factors, including genetic abnormalities, brain injury, and developmental defects, are known to contribute to epilepsy.[6]

In traditional medicine or ethno medical practices, native plants are utilized as treatments for a range of illnesses. Compounds derived from natural sources have gained significance over the past few decades due to the wide range of chemical variety they provide. Over the past two decades, there has been a remarkable surge in the demand for herbal treatment due to this. They are widely accessible, reasonably priced, and safe for most people. These medications have provided a significant head start in drug development, leading to the identification of new compounds. Chinese Pharmacopoeia lists the dried fruit of the leguminous shrub Psoralea corylifolia Linn. (syn: Cullen Linn.) as one of the most widely used forms of Traditional Chinese Medicine. P. corylifolia is an annual plant that grows over India's plains. The plant is extremely important to biology, and people have been using it for centuries because of its amazing ability to treat a variety of skin conditions, including leukemia, leprosy, and psoriasis. [7]

II.MATERIAL AND METHOD

Drug and Chemicals

Phenobarbital (Abbott group, India) Pentylenetetrazole was obtained from Thermosil Fine Chem Industries, Pune.

Collection of Plant extract

The medicinal plant leaves extract of Psoralea corylifolia linn, Were purchased from Shivay Herbal Jaipur, Rajasthan.

Animals

Swiss albino mice, weighing between 25 and 35 grams, were procured from the Department of Pharmacology's animal home. Vidyaniketan College of Pharmacy, Anjangaon Surji.

Before being used, every animal is acclimated to the animal house. They are housed in an animal case in an animal house with a 12 hour light and 12 hour dark cycle, 50+/65% relative humidity, and a temperature of 25°C to 1°C.

The experimental protocol was approved by the institutional animals ethical committee (IAEC), and the experiments were carried out in compliance with the guidelines set out by the Committee for the Purpose of Control and Supervision of Experimental Animals (CPCSEA). Animals are given pellets and unlimited amounts of tap water. the handling and care of animals in compliance with the widely recognized standard guidelines for the use of animals (CPCSEA).

Acute Toxicity Study

A produced extract's acute toxicity was tested and documented.[8]

Selection of Dose Groups:

1. Based on results from acute toxicity studies, Psoralia coryliffolia Linn.'s LD50 was determined to be as high as 138 mg/kg.

2. So, the test group was split into two groups: 60 mg/kg for the low dose and 120 mg/kg for the high dose.

Activity of Anticonvulsants

Pentylenetetrazole (PTZ) induced convulsion

Mice were given PTZ 70 mg/kg i.p. The duration of the convulsions was noted in the parameter. There were five groups of animals. Every group has six creatures in it.

Group I: Vehicle

Group II: PTZ 70 mg/kg on 10^{th} day.

Group III: Oral Phenobarbital (1.2 mg/kg) with PTZ (70 mg/kg intraperitoneally) on the 10^{th} day. Group IV: On day 10, administer PTZ (70 mg/kg i.p.) together with the test extract (60 mg/kg i.p.).

Group V : Received PTZ (70 mg/kg i.p.) and test extract (120 mg/kg i.p.) on the tenth day.

The test samples were administered one hour before convulsions were induced on the tenth day. A measure of the test's effectiveness was the cessation of the convulsions.

Analysis

Statistical Significance

The study's findings were presented as Mean ± SD, n = 6. The data were analyzed and compared using one-way ANOVA, and then the multiple comparison tests Dunnett and Tukey were applied.

III. RESULT

Anti-epileptic activity

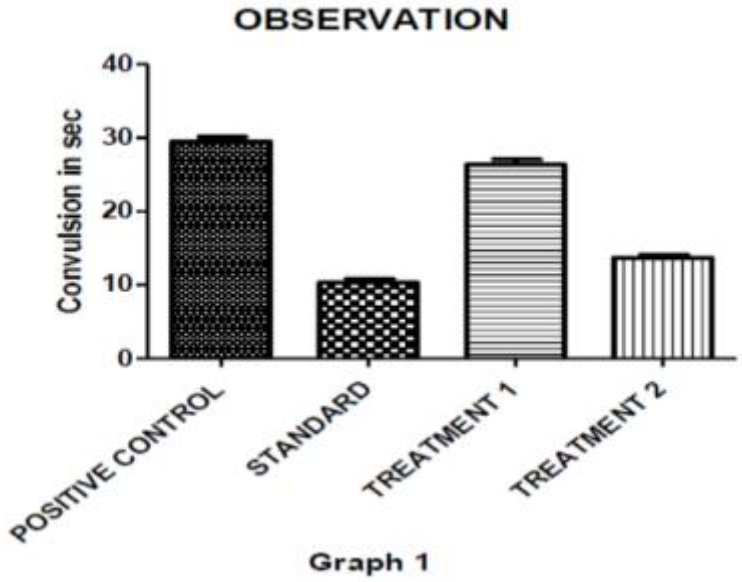
PTZ induced seizures

Using a mouse model of pentylenetetrazole-induced seizures, the anticonvulsant potential of Psoralia corylifolia Linn leaf extract was assessed. The amount of time needed for both recovery and hind limb extension was decreased by an extract from Psoralia corylifolia linn leaves in a dose-dependent manner.

Way in the model of PTZ-induced seizures. The duration of hind limb tonic extension was found to be significantly reduced ($p<0.05$) at 60 and 120 mg/kg extract doses when compared to control at both doses. Similarly, the duration of recovery time also demonstrated a significant ($p<0.05$) reduction when compared to control and standard at low dose and $p<0.05$ when compared to control and standard resp. at high dose at these doses, representing 29.50±0.6191 seconds, respectively.

Table No.1 Observation table for behavioural parameters in PTZ model of Epilepsy.

Sr. No.	Groups	Treatment	Dose	Duration of Convulsions in sec
1	Positive Control	PTZ	70mg/kg	29.50 ± 0.6191
2	Standard	Phenobarbital	1.2mg/kg	10.33 ± 0.4944
3	Test 1	Leaves extract of Psoralia corylifolia linn	60mg/kg	26.33 ± 0.7149
4	Test 2	Leaves extract of Psoralia corylifolia linn	120mg/kg	13.67 ± 0.4216

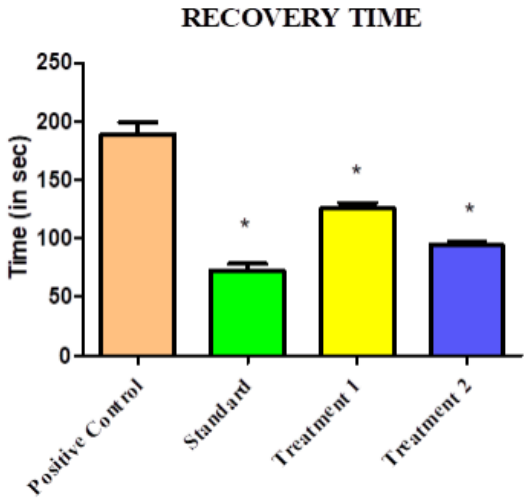


Graph 1

Each set of six mice's mean ± SEM is used to express all data. Dunnett followed a one-way anova. Values from the multiple comparison test and the comparison to the positive control are statistically significant at *P < 0.05.

Table No.2 Observation table for % Protection

Sr. No.	Groups	Time of Recovery	Number of Animal Showed Convulsion	% of Protection
1	Positive Control	188.8±2.49	6	0
2	Standard	72.5±1.40	0	100
3	Treatment 1	125.5±1.198	3	50
4	Treatment 2	94±0.764	2	66.67



Each set of six mice's mean ± SEM is used to express all data. Tukey Multiple Comparison Test is used after a one-way ANOVA, and the results are statistically significant at *P < 0.05 when compared to the Positive Control.

Photochemical screening of the extract of Psoralia corylifolia linn Leaves

The extract's preliminary phytochemical study verified the presence of several Phytoconstituents, including lipids, carbohydrates, alkaloids, glycosoids, and flavonoids. [Table 3.]

Table .3 The phytochemical investigation of crude extract of Psoralia corylifolia linn are as follows.

Sr. No.	Chemical constituents	Name of the test	Result
1	Carbohydrates	Molish test	Positive
2	Flavonoids	NaOH test	Positive
3	Glycoside	Killer-Killani Test	Positive
4	Alkaloids	Dragendroff's Test	Positive
		Mayer's Test	Positive
5	Fat	Saponification test	Positive

IV. DISCUSSION

In the PTZ-induced seizure model, the study's results showed that treatment with Psoralea corylifolia Linn extract significantly decreased the incidence and duration of hind limb extension when compared to the control group. These findings suggest that Psoralea corylifolia Linn may have anticonvulsant properties.

Psoralea corylifolia Linn's phytochemical components, including as flavonoids, coumarins, and furanocoumarins, which have been shown to have neuroprotective and antiepileptic qualities, may be responsible for the plant's anticonvulsant benefits. These bioactive substances could alter ion channels, neurotransmitter networks, or other targets connected to epileptic seizures.

The current research expands on the increasing amount of data indicating Psoralea corylifolia Linn's potential as an anticonvulsant. Its therapeutic effects in a variety of neurological illnesses, including epilepsy, have been documented in earlier investigations. Based on these results, Psoralea corylifolia Linn could be a good starting point for the creation of new antiepileptic medications.

V. CONCLUSION

To sum up, the research on hind limb extension carried out on PTZ-induced mice provides evidence in favor of Psoralea corylifolia Linn's anticonvulsant properties. These results demonstrate Psoralea corylifolia Linn's potential as a natural source for the creation of novel antiepileptic medications. To clarify its exact mechanisms of action and assess its safety and efficacy in more thorough laboratory models and, eventually, clinical trials, more research is required.

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