CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3608133

Available online at: http://www.iajps.com ***Research Article***

PHYTOCHEMICAL SCREENING AND ANTICONVULSANT ACTIVITY OF SEBASTIANIA CHAMAELAE

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Article Received: November 2019 **Accepted:** December 2019 **Published:** January 2020

Abstract:
Epilepsy is one of the most common serious neurological conditions. In contemporary society, the frequency and importance of epilepsy can hardly be overstated from the epidemiologic studies. The plant Sebastiania chamaelea belonging to the family of Euphorbiaceae. Here Phyto chemical screenimg and anti convulsant activity of Sebastiania chamaelea evaluated. The phytochemical screening showed the presence of alkaloids, terpenoids, tannins, sterol's,flavonoids and carbohydrates. Present study was under taken to screen anti convulsant activity of Sebestiana chamelea. The drug was administered in the form of hydro alcoholic extract orally and the effect was noted at two doses. The drug was found quite safe by oral route as animals tolerated drug up to the dose of 2.00 gm. Following interpretations are worth of note in the present study: The drug is quite safe by oral route as animals tolerated drug up to the dose of 2.00 gm/Kg b.w. in rats.The drug showed significant antiepileptic activity in both strychnine induced seizures. The anti epileptic effect was more pronounced at higher dose of the test drug than the lower dose. The drug at higher dose protected the entire animal from death and percent protection from death in lower dose was 33%. Present study indicated that Sebestiana chamelea has a potential for developing it as anti epileptic drug, however more refined studies are needed to evaluate it for exact mechanism of action and chemical constituent of Sebestiana chamalea responsible for the anti epileptic action.

Keywords: *Sebastiania Chamaelae, Phytochemical screening, anti convulsant activity.*

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Please cite this article in press Kovuru.Saisankerthana et al., ***Phytochemical Screening And Anticonvulsant Activity Of Sebastiania Chamaelae.,*** *Indo Am. J. P. Sci, 2020; 07(01).*

INTRODUCTION:

Epilepsy is one of the most common serious neurological conditions. In contemporary society, the frequency and importance of epilepsy can hardly be overstated from the epidemiologic studies. However, in most studies, the overall incidence of epilepsy in developed societies has been found to be around 50 cases per 100,000 persons per year, and rises steeply in older age 1, 2. It affects approximately 50 million people Worldwide 3. According to several publications this can amount to 70% of the people with epilepsies, with a high prevalence of about 0.8% in children below the age of seven years. The current therapeutic treatment of epilepsy with modern antiepileptic drugs (AEDs) is associated with side-effects, dose-related and chronic toxicity, and teratogenic effects, and approximately 30% of the patients continue to have seizures with current AEDs therapy [1-4].

Natural products from folk remedies have contributed significantly in the discovery of modern drugs and can be an alternative source for the discovery of AEDs with novel structures and better safety and efficacy profiles [5]. Now, various phytochemical and pharmacological studies have been carried out on these anticonvulsant plants [6]. Herbal medicines are often considered to be a gentle and safe alternative to synthetic drugs. More than half of the medically important pharmaceutical drugs are either natural products or derivatives of natural products [7-9]

The plant Sebastiania chamaelea belonging to the family of Euphorbiaceae, the juice of plant astringent, Tonic It is used against diarrhoea, Syphilis. When cooked together with meat, and vegetables, whole plant is used for speedy recovery for women after giving birth. In Africa decoctions of the stems are used to relieve teething pain (as a bath), vertigo (applied on head) and taken with butter in the form of tonic [10,11]

MATERIALS AND METHODS:

Collection, identification and Authentication of plants:

The Aerial part of plant is selected for the study will be collected from the local areas of Belgaum, Karnataka and authenticated.

Extraction procedure:

Freshly collected plant materials was dried under shade and the dried material was milled to obtain a coarse powder. To the coarse powder was packed in a soxhlet apparatus and subjected to extraction with Eathnol. The liquid extracts was collected and evaporated under reduced pressure until a soft mass obtained. The mass obtained was weighed in each case. The extracts were thoroughly air dried to remove all traces of the solvent. The percentage hield of extraction is shown in Table 1

Preliminary Phytochemical Screening:

The condensed extracts were used for preliminary screening of phytochemicals such as cholesterol, alkaloid, flavanoids, saponin, cardiac glycosides and terpenoids [12,13]. The phytochemical screening shown in table 2.

Screening Procedure:

Test for flavonoids:

Add a few drops of concentrated HCL and Mg turning to 1 ml of ethanol extract. Appearance of pink or magenta-red colour indicates the presence of flavanoids.

Test for cholesterol:

To 2 ml of the extract 2 ml of the chloroform was added in a dry test tube. Then 10 drop of acetic anhydride and 2 to 3 drops of con. H2SO4 was added. A red colour changed to blue green colour.

Test for Alkaloids:

To the extract added 1% HCl and 6 drops of Mayer's reagent and Dragendorff reagent. Any organic precipitate indicated the presence of alkaloids in the sample.

Test for terpenoids:

5ml of each extract was added to 2ml of chloroform and 3ml of con.H2SO4 to form a monolayer of reddish brown coloration of the interface was showed to form positive result for the terpenoids.

Test for cardiac glycoside:

5mlof each extract was treated with 2ml of glacial acetic acid containing one drop of ferric chloride solution. This was underplayed with 1ml of con.H2SO4. A brown ring of the interface indicated a deoxysugar characteristic of cardenolides. A violet ring might appear below the brown ring whereas acid layer, a greenish ring might form just gradually throughout thin Layer.

Test for steroids:

2 ml of acetic anhydride was added to 0.5 g of ethanolic extract of each sample with 2ml of H2SO4. The colour change from violet to blue or green indicated the presence of steroids

Test for Saponins:

The extract with 20 ml of distilled water was agitated in a graduated cylinder for 15 minutes. The formation

of 1cm layer of foam indicated the presence of saponins.

Pharmacological studies:
Wistar albino rats of either sex weighing between 150-200 gms will be selected for experiments. They will be employed for assessing antiepileptic activity [14,15]. The Anti consultant results shown in table 3, Figure 1 and 2

Number of groups required for the study will be as follows, each group contains six animals.
Group I - served as control (normal saline)
Group II - served as reference drug (Phenytoin) mg/kg body weight(i.p)
Group III - Hydro-alcoholic aerial part extract of Sebastiania chamaelea (200mg/kg, b.w,p.o)
Group IV - Hydro-alcoholic aerial part extract of Sebastiania chamaelea (400mg/kg, b.w,p.o)

II-IV groups treated with one hour later administration of test drugs, strychnine 5mg/kg i.p. strychnine administered

Statistical examination of data:
All the results will be analyzed using One-way ANOVA followed by Tuckey's test.

RESULTS:

Percentage yield of extraction

Table no1: Percentage yield

S.No	Type of extraction	Percentage yield
1.	Eathanol	19.54%

Quantitative phytochemical analysis of extracts

Table no2: Quantitative phytochemical analysis

S.No	Test	Ethanol extract
1.	Carbohydrates	+
2.	Glycosides	-
3.	Terpenoids	+
4.	Fixed oils & Fats	+
5.	Alkaloids	+
6.	Phytosterols	+
7.	Flavanoides	+
8.	Phenolic compounds	-
9	Tannins	+

pharmacological activity:
Strychnine was used to induce seizures and the test drugs were administered to assess effect on the seizures. The parameters assessed in animals were total number of convulsion, onset of first seizure; onset of clonic convulsions, duration of clonic convulsion, onset of tonic convulsion, duration of tonic convulsion, number of death within 30 min duration, and % age protection from death was also calculated.

The animals were divided into four groups of 6 animals each. Plain control was administered vehicle orally; standard control group was administered diazepam 5 mg/kg b. w. i.p.; test group A was administered 200 mg/kg orally, where test group B was administered 400 mg/kg orally.

After the administration of the above drugs, all animals were injected Strychnine after 30 min of the administration of diazepam i.p. in standard control and 60 min of administration of vehicle, test drug A and test drug B in plain control group, test group A and test group B respectively. Just after administration of Strychnine, animals were placed in an isolated cage and assessed for above mentioned parameters.

Mean total number of convulsion in plain control was 804.33 ± 103.74; in test group A was 686±35.15; in test group B was 247±126.96, and no convulsion appears in animals of standard group. The mean score of each group were compared with each other using ANOVA one way with post Tuckey pair comparison test. Mean total number of convulsion in test A and test B were significantly ($p < 0.01$) reduced when compared with mean score of plain control, Test group B showed significant ($p < 0.01$) reduction in mean number of convulsion when compared with test group A.

Mean onset of first seizure in plain control was 33.83 ± 1.76, in test group A was 57.5±4.83 and in test group B was 64 ± 3.81, test A and test B were significantly ($p< 0.01$) delayed the mean onset of first seizure when compared with plain control, but test A in comparison to test B there was no statistical significant ($p>0.05$) difference. The mean onset of clonic convulsion in plain control was 50.5 ± 5.59, in test group A was 68.16 ± 3.63 and in test group B was 81 ± 4, test drug A and test drug B showed significant ($p<0.05$) increase in comparison to plain control, but there no significant difference was found when test group A was compared with test group B. The mean duration of clonic seizures in plain control was 11.5 ± 1.39, in test A was 9.84 ± 0.95 and in test B it was 9 ± 0.86, there is no significant difference found between mean scores when compared with each other.

Table no3: Effect of SCHE on Strychnine induced seizures in rats

Parameters	Group I(pc) Vehicle m P.O	Group II(sc) Control Diazepam 5mg/kg i.p	Group III(test A) SCHE 200mg /kg p.o.	Group IV(Test B) SCHE400 mg /kg p.o
No. of Convulsions(sec)	804.33 ±103.74	0.00	686±35.5	247±126.96[a,c]
Onset of 1 seizure (sec)	33.83±1.76	0.00	57.5±4.83[b]	64±3.80[a]
Onset of Clonic Convultion (sec)	50.5±5.58	0.00	68.17±3.63[b]	81±3.99[a]
Duration of tonic convultion (sec)	11.5±1.38	0.00	9.83±0.95	9±0.86
Onset of tonic convultion (sec)	109.17±8.00	0.00	350.33±66.14	795.66±68.62[a,c]
Duration of tonic convultion (sec)	18.5±1.18	0.00	15±1.18	3.33±2.5[a,c]
Number of death	6	0	4	0
% of protection	0	100	33.33	100

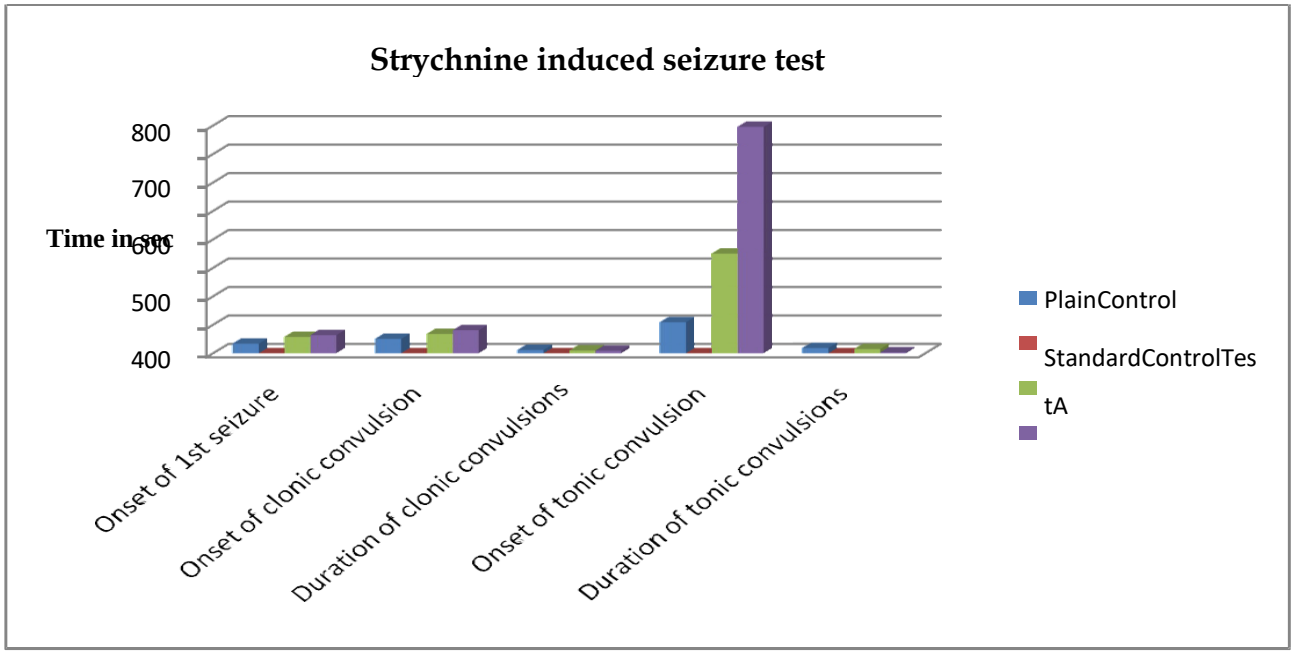

Fig No 1: Effect of hydroalcoholic extract of SC on Strychnine induced seizures in rats

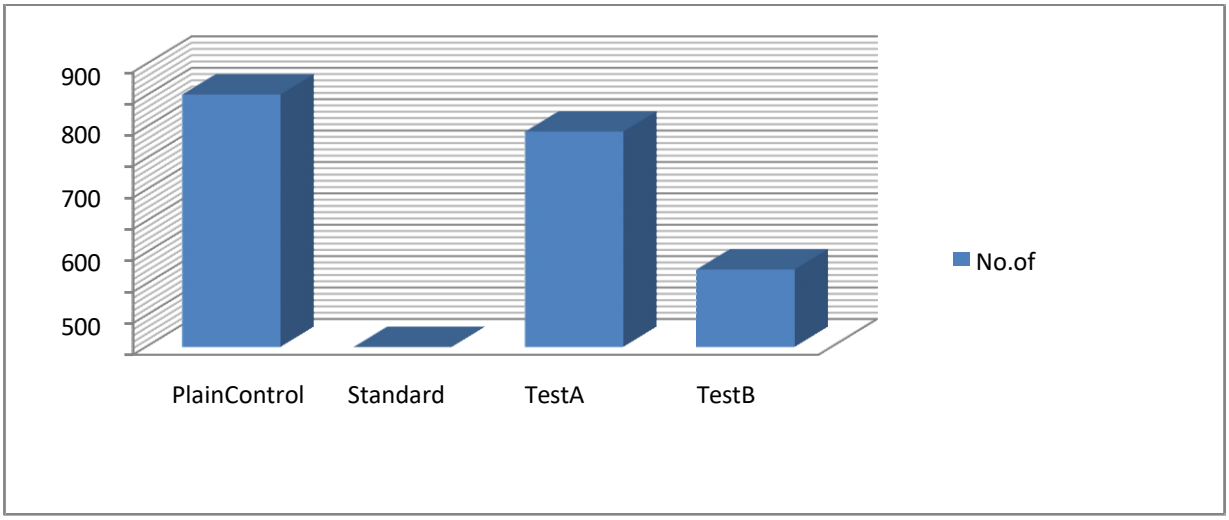

Fig No 2: Effect of hydroalcoholic extract of SC on Strychnine induced convolusions in rats

CONCLUSION:

Present study was under taken to screen anti convulsant activity of Sebestiana chamelea. The drug was administered in the form of hydro alcoholic extract orally and the effect was noted at two doses. The drug was found quite safe by oral route as animals tolerated drug up to the dose of 2.00 gm. Following interpretations are worth of note in the present study:

-The drug is quite safe by oral route as animals tolerated drug up to the dose of 2.00 gm/Kg b.w. in rats.

-The drug showed significant antiepileptic activity in both strychnine induced seizures

-The anti epileptic effect was more pronounced at higher dose of the test drug than the lower dose.

- The drug at higher dose protected the entire animal from death and percent protection from death in lower dose was 33%.

Present study indicated that Sebestiana chamelea has a potential for developing it as anti epileptic drug, however more refined studies are needed to evaluate it for exact mechanism of action and chemical

constituent of Sebestiana chamalea responsible for the anti epileptic action.

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