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Research article

Anti-Convulsant activity of *Yogaraja Guggulu* in Maximal Electro Shock (MES) induced method

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ABSTRACT

Background

Epilepsy is one the common neurological disorder worldwide, epileptic seizures syndrome can be due to wide variety of causes including genetic, developmental or acquired ones. Epileptic seizures are seizure events that occur due to excessive abnormally synchronized, localized or widely distributed neuronal electrical discharges. With about 80 percent of cases thought to be in developing countries where it is linked to superstition. Anti-epileptic drugs (AEDs) are adverse side effects. Herbal medicine has always been traditionally part of treatment for epilepsy. Herbal medicines are generally well tolerated with fewer side effects. WHO in partnership with internal bureau for epilepsy (IBE), International league against epilepsy (ILASE) suggested that around 1% of world population at any time (about 50million people worldwide) is affected with this neurological disorders. The annual incidence ranges from 20 to 70 cases per 100,000 and the point prevalence is 0.4 to 0.8 percent. The incidence rates are highest in childhood, febrile convulsants which occur in an approximately 5 percent of childhood.

Method

Swiss albino rats of both sexes were used for this study. Animals were divided in five groups, each containing ten mice. Experimental procedures and protocols for the study were approved by Kalasalingam Academy of Research and Education, Virudunagar, Tamil Nadu. Maximal electro shock (MES) were used for the evaluation of the anticonvulsant activity of Yogaraja Guggulu.

Conclusion:

Potential herbal remedies have shown positive results in animal models. It remaining unclear many make it into clinical trials and eventually making part of the AED list. More rigorous research applying strict research methodology with uniform herbal combinations, polyherbal compound medicines, as well as clinical studies are urgently.

Keywords:

Sirakambavatham, Yogaraja guggulu, Epilepsy, Siddha anticonvulsant drug.

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INTRODUCTION

India is a rich source of medicinal plants and a number of plant extracts, whole plants, polyherbal, and compound combination are used against diseases in various systems of medicine such as Siddha, Ayurveda, and Unani. Some of them have been scientifically explored. Searching the plant kingdom for a treatment or cure for convulsions or seizures is not as unreasonable approach to the problem. Convulsion is collectively designated for a group of chronic central nervous system (CNS) disorderloss of consciousness and body movements (convulsion).

Epilepsy is one the common neurological disorder worldwide, epileptic seizures syndrome can be due to wide variety of causes including genetic, developmental or acquired ones. Epileptic seizures are seizure events that occur due to excessive abnormally synchronized, localized or widely distributed neuronal electrical discharges.

With about 80 percent of cases thought to be in developing countries where it is linked to superstition. Anti-epileptic drugs (AEDs) are adverse side effects. Herbal medicine has always been traditionally part of treatment for epilepsy. Herbal medicines are generally well tolerated with fewer side effects. WHO in partnership with internal bureau for epilepsy (IBE), International league against epilepsy (ILASE) suggested that around 1% of world population at any time (about 50million people worldwide) is affected with this neurological disorders.

The annual incidence ranges from 20 to 70 cases per 100,000 and the point prevalence is 0.4 to 0.8 percent. The incidence rates are highest in childhood, febrile convulsions which occur in an approximately 5 percent of childhood.

Most antiepileptic drugs (AEDs) do not prevents or reverse the pathological process new therapies fewer side effects and better efficacy. Traditional healers are often the first line of contact in the of therapy supernatural powers. Some medicinal plants have shown potential as new safe treatment options. Although many of them have traditionally been used as sedative and antiepileptic agent, there is still lack of controlled experimental reports on therapeutic use. The therapeutic potential of herbal plants and some of their bioactive compounds have been the subject of screening step is animal models. The review is restricted to animal studies that have been published in the last five years. The aim of this review is to highlight recent advances in the search for herbal therapy against epilepsy.

MATERIALS AND METHODS

The drug required for the preparation of the trial medicines would be collected from raw drug storage room (pharmacy block), Govt. Siddha medical college, Palayamkottai and also reputed raw drug stores. After which it is purified & prepared in the Gunapadam laboratory at Govt. Siddha medical college, Palayamkottai. To prepare this, review a literature search from pubmed and science direct, google scholar articles was performed.

Identification:

All drugs are identified by the Head of the department of Medicine botany and Gunapadam Department

Table 1. Ingredients of Test medicine

S.No	Drug name	Botanical name
1	Mysatchi Kungiliyam	Shorea robusta
2	Karkandu	Rock candy (sugar)
3	Omam	Carum copticum
4	AsamathaOmam	Trachyspermum roxburghianum
5	Sevviyam	Black pepper root - piper nigrum
6	Vasampu sutta sampal	Acorus calamus
7	Vaaivilangam	Embelia ribes
8	Sukku	Zingiber officinale
9	Siruthekku	Clerodendrum serratum
10	Karuncheeragam	Nigella sativa (cuminum nigrum)
11	Cheeragam	Cuminum cyminum
12	Athividaiyam	Aconitum hetrophyllum
13	Kodiveli	Plumbago indica
14	Perungayam	Ferula asafoetida
15	Kadugu	Brassica juncea
16	Yaanai Thipili	Scindapsus officinalis
17	Thipili Moolam	Piper longum (chaba)
18	MarulKizhangu	Sansevieria roxburghiana
19	Aadu Theenda Palai	Aristolochia bracteata
20	Ver	Picrorhiza kurrya
21	Kadugorohini	Terminlia chebula
22	Kadukkai	Phyllanthus emblica
23	Nellikai	Terminalia bellirica
	Thantrikai	

All drugs will be purified as per classical Siddha literature texts and above all the drugs are must be purified and grind well the powder formed of remaining drug. Mix it well**.** The trial drug is stored in clean & dry wide mouthed tight container.

Animals

Swiss albino mice of either sex (20–30 g) were procured from the Animal house of IPS College of Pharmacy Gwalior, Madhya Pradesh (India). The animals were kept in a standard plastic cage at controlled room temperature 22°C ± 3°C and relative humidity 50% ± 5% with the 12 hours light and dark cycles with free access to water and food. The research protocol was conducted according to the guidelines of Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) (Registration no. after approval by Institutional Animal Ethical Committee (Approval no. AKCP/IAEC/81)

Screening for anticonvulsant effects

Maximal electro shock (MES)-induced seizures

MES model was used for the evaluation of the anticonvulsant effect of YG. Electro Convulsiometer (Model No EC-02) was used for delivering an electric shock (50 mA for 0.2 seconds).

Table 1.MES-induced seizures in mice.

Treatment	Number of animals convulsed/No. used	Animals protected against sei-	Duration of YG (in seconds) mean ± SEM
Control (10 ml/kg)	12/12	0	30.25 ± 4.32
Phenytoin (25 mg/kg)	2/12	100	2
YG (200 mg/kg)	9/12	30	23.45 ± 4.11*
YG (400 mg/kg)	6/12	60	15.53 ± 3.41***
YG (600 mg/kg)	5/12	70	9.21 ± 0.98***

With the help of corneal electrode to induce hind limb tonic extension (YG) in mice (Kulkarni, 1999; Swinyard *et al*., 1952). YG was administered at the dose of 200, 400, and 600 mg/kg, orally while phenytoin (25 mg/kg, intra peritoneally) was used as a standard drug. All the treatments were given 30 minutes before applying electric shock. Animals were divided into five groups, each group containing 10mice.

GroupIreceivednormalsalinesolution(10ml/kg,orally).

Group II received the standard drug, phenytoin (25 mg/kg, intra peritoneally Group III, IV, and V received YG (200, 400, and 600 mg/kg, orally). The total duration of YG, onset of convulsions, and incidence of mortality in all groups of animals were recorded. The animals which did not exhibit YG were considered protected.

RESULTS

Anticonvulsant effects

MES-induced seizures

Treatment with YG (200, 400, and 600 mg/kg) showed significant protection of animals in MES-induced convulsion exhibited protection against YG-induced electric shock with maximum protection (70%) at 600 mg/kg. YG treatment (200, 400, and 600 mg/kg) also showed significant (p<0.05–p time of convulsion when compared with control, wherein the maximum reduction in tonic seizures duration was exhibited with YG at 600 mg/kg. Standard drug, phenytoin, also exhibited protection (100%) against YG (Table 1).<0.001,whereverapplicable)reductioninlatency.

DISCUSSION

The aim of the present study was to investigate the protective effects of Y Gon experimental models of convulsions. The MES-induced seizure model is used primarily as an indication for compounds which are effective in epilepsy.

Results are expressed as mean ± SEM (n = 10). *p < 0.05; ***p < 0.001 compared with control. YG: Ethanolic extract of stem bark of *A. latifolia*. YG: hind limb tonic extension.It is difficult to elucidate the exact mechanism responsible for the anticonvulsant action of YG. Most of the anticonvulsant drugs like phenytoin inhibit voltage-dependent Na+ channels and prevent tonic extension in MES-induced convulsion (Browning, 1992; Liow*et al*., 2007; Rho and Sankar, 1999; Rogawski and Porter, 1990)

while drugs like diazepam acts through binding with GABAA receptor complex and potentiate GABA (inhibitory neurotransmitter)-mediated inhibition by enhancing affinity of GABA neurotransmitter to its recognition sites in the GABA receptor complex. This ultimately increases the chloride channel opening frequency which leads to increase of the influx of chloride ion in the neurons, ensuing hyper polarization. (Czapinski*etal*.,2005; Rang *et al*., 2012). Hence, it is possible that YG may have influence either on voltage-gated Na+ channels or GABAergic neurotransmission.

RESULTS

The efficacy of the drug among may be tested with the help of literal evidence. The limited efficacy of AEDs is still a matter of concern. Animal models have been used since time immemorial to test new drugs, and are continuing become more sophisticated as technology and scientific understanding progress. Has presented some of the potential herbal remedies that have been tested and shown be positive result in animal models. Herbal combinations as well as clinical studies with selected standardized botanical extracts are urgently needed to determine which is most efficacious. Pre-clinical and clinical studies are encouraged to help the legacy of herbal medicine gain more and impact recognition.

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CONFLICTS OF INTEREST

None declared.

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