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Research Article

SCREENING OF SEIZURE CONTROL ACTIVITY OF KUSHMANDA FRUIT (*Benincasa hispida* Thumb) IN ALBINO RATS

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ABSTRACT
The aim of the present study was to evaluate the anticonvulsant activity of juice and aqueous extract of *Benincasa hispida* Thumb fruit in Albino Rats.
Two drug samples were prepared i.e. *Benincasa hispida* fruit juice and aqueous extract. MES Model was adopted to observe the seizure control activity of tested drug. Flexion, clonus, recovery time, duration of tonic hind leg extension and onset of stupor were observed.
Preliminary Phytochemical analysis revealed presence of Steroids, Alkaloids, Starch, Hexosugars, Monosaccharide's and Proteins. Swarasa (Juice) at the dose of 0.9 ml/200 gm of rat shows significant protection against the shock induced convulsions (Significant at the level of $P<0.05$). Aqueous extract at dose 100mg/200 gm of rat shown lesser protection compare to the Swarasa (Significant at the level $P<0.05$). Nasal and orbital bleeding is observed in control and standard group but it is absent in test groups. The *Benincasa hispida* fruit juice possesses anticonvulsant activity.
KEY WORDS: *Benincasa hispida*, Maximal electro shock, seizures, Phenytoin

INTRODUCTION

Epilepsy is a serious neurological disorder which does not have any boundaries such as age, race, social class or nationality. The incidence of the disease in developing countries is higher than that in developed countries and is reported to be 190 per one lakh people. The currently available anticonvulsant drugs suffer from drawbacks like teratogenic and other dose related side effects. In spite of daily treatment 30% of patients continue to have convulsions[1]. Medicinal plants are believed to be an important source of new chemical substance with potential therapeutic effects. Several plants used for the treatment of epilepsy in different systems of traditional medicine like Ayurveda, Sidda and Unani systems. These medicines have shown activity when tested in modern bioassays for the detection of anticonvulsant activity and many such plants are yet to be scientifically investigated[2].

In Ayurveda so many medicines explained for the treatment of epilepsy (Apasmara). In the text Bhavaprakasha Nighantu Kushmanda is mentioned as an Apasmarahara[3] that means the Kushmanda is one of the best drug of Apasmara. Kushmanda (*Benincasa hispida* Thumb) is stoutening, apharodisiac, Cold in potency, sweet and slightly alkaline in taste, increase digestive fire, easily digestible, cleanses the urinary bladder, cure the disorder of the mind[3]

In this present study Kushmanda (*Benincasa hispida* Thumb.) has been taken from the Ayurvedic treasure of therapeutics having indications as epilepsy, diabetes, calculi, acidity, haemoptisis etc.[4] *Benincasa hispida* Thumb belongs to a family Cucurbitaceae[5] and is known as Ash gourd in English, it is also used as vegetable. A large climbing or trailing herb with stout, angular, hispid stems, cultivated as a vegetable throughout India.[6] *Benincasa hispida* Thumb is recommended for the treatment of epilepsy (Apasmara)[7]. The present study was undertaken to investigate anticonvulsant activity of aqueous extract and juice of *Benincasa hispida* Thumb in rats.

MATERIALS AND METHODS

Plant materials: The fresh fruits of *Benincasa hispida* were collected from Yellur village district Belgaum, Karnataka. The plant material was authenticated by experts. Herbarium Voucher Number - CRL/09/75.

Preparation and Extract[8]: 5g air dried drug coarsely powdered and macerated with 100ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allow to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate the filtrate to dryness in a tared flat-bottomed shallow dish, and dry at 105º, to constant weight and weigh. Calculate the percentage of water-soluble extractive with reference to the air-dried drug.

Preliminary Phytochemical Screening: A Preliminary Phytochemical screening of the extracts revealed the presence of proteins, carbohydrates, glycosides, steroids, Hexosugars, Monosaccharide's etc.[9] Tannins and proteins are absent in aqueous extract, and tannins are absent in swarasa (Juice).

Experimental Study[10]

Healthy Male Wister Albino Rats (110-180 mg) were used. The required numbers of animals were procured from Animal house of KLE'S Shri B.M.K. Ayurveda College Sahapur, Belgaum, Karnataka. The animals were housed in standard cages with free access of food (standard laboratory rodent's chow) and water. The animal's house temperature was maintained at 23± 3.0 ^{0}C with a 12hrs light/dark cycle. All the experimental procedure and protocols were reviewed by the Institutional Animals Ethics Committee (IAEC) of the Institute with reference no.1017/C/06/CPCSEA.

MES Method[11]

Maximal electroshock model- this method was used to evaluate the anticonvulsant activity of extract and juice. Animals were divided into four groups of 6 animals each (n=5). An electrical stimulus of sufficient intensity to induce maximal seizure is applied by means of an external device stimulator or convulsiometer. A supramaximal strength is 150mA in rats for 0.2 seconds is used .The stimulus is applied via corneal or ear clip electrodes. MES seizures

remain the primary screening for potential Anticonvulsant activity.

Requirements

Animals - Healthy Male Wister Albino Rats (110-180 mg)
Drugs - Phenytoin (400mg/kg)
Test Drugs- The Swarasa and the Aqueous Extract.
Equipments- Electro-Convulsiometer,corneal or ear electrodes (apply 150mA current for 0.2sec) stop watch.

Assessment of Anticonvulsant activity:

Parameters selected for the assessment of anticonvulsant activity are- Flexion, Extention, Clonus, Stupor, and Recovery time. After inducing electric shock to all group these parameters were observed.

Table: 1

GROUP	DRUG/EXTRACT	DOSE	ROUTE OF ADMINISTRATION
Control	Distilled water	1 ml/rat	Orally
Standard	Phenytoin	400mg/kg	Orally
Swarasa	Kushmanda Swarasa	24ml/50kg wt	Orally
Extract	Aqueous extract	500 mg/kg wt	Orally

Statistical Analysis: by ANOVA Test

Table 2: Mean of the Flexion, Extension, Clonus, Stupor and recovery in seconds

Signs	Control	Standard	Swarasa	Aqueous	P Value	Significance
Flexion	2.83	03	4.66	4.16	P>0.05	**Insignificant**
Extension	10.16	5.33	05	5.66	P<0.05	**Significant**
Clonus	20.83	29.5	18.66	19	P>0.05	**Insignificant**
Stupor	122.83	74.33	105.5	73.16	P>0.05	**Insignificant**
Recovery	156.66	112.16	134.16	101.83	P<0.05	**Significant**

(P<0.05 is considered as significant)

RESULTS

- Nasal and orbital bleeding is observed in control and standard group but it is absent in test groups.
- Assessment of Parameter I II III & IV of all groups

Table: 3

Group	Si. No	Flexion	Extension	Clonus	Stupor	Recovery time
1.Control group	1	04 sec	09 sec	17 sec	234 sec	264 sec
	2	03 sec	09 sec	10 sec	117 sec	139 sec
	3	01 sec	11 sec	12 sec	117 sec	141 sec
	4	03 sec	11 sec	38 sec	64 sec	116 sec
	5	04 sec	09 sec	38 sec	84 sec	135 sec
	6	02 sec	12 sec	10 sec	121 sec	145 sec
2.Standard group	1	02 sec	0 8 sec	10 sec	83 sec	103 sec
	2	05 sec	00	64 sec	82 sec	151 sec
	3	03 sec	07 sec	48 sec	47 sec	105 sec
	4	03 sec	06 sec	32 sec	82 sec	123 sec
	5	02 sec	07 sec	12sec	95 sec	116 sec
	6	03 sec	04 sec	11 sec	57 sec	75 sec
3.Swarasa group	1	02 sec	09 sec	13 sec	106 sec	130 sec
	2	0 3 sec	08 sec	10 sec	126 sec	147 sec
	3	07 sec	00	19 sec	93 sec	119 sec
	4	03 sec	06 sec	15 sec	120 sec	144 sec
	5	03 sec	07 sec	38 sec	104 sec	154 sec
	6	10 sec	00	17 sec	84 sec	111 sec
4.Aqueous group	1	01 sec	08 sec	08 sec	73 sec	89 sec
	2	03 sec	06 sec	07 sec	71 sec	87 sec
	3	09 sec	00	40 sec	88 sec	137 sec
	4	02 sec	08 sec	11 sec	89 sec	110 sec
	5	02 sec	08 sec	15 sec	103 sec	128 sec
	6	08 sec	04 sec	33 sec	15 sec	60 sec

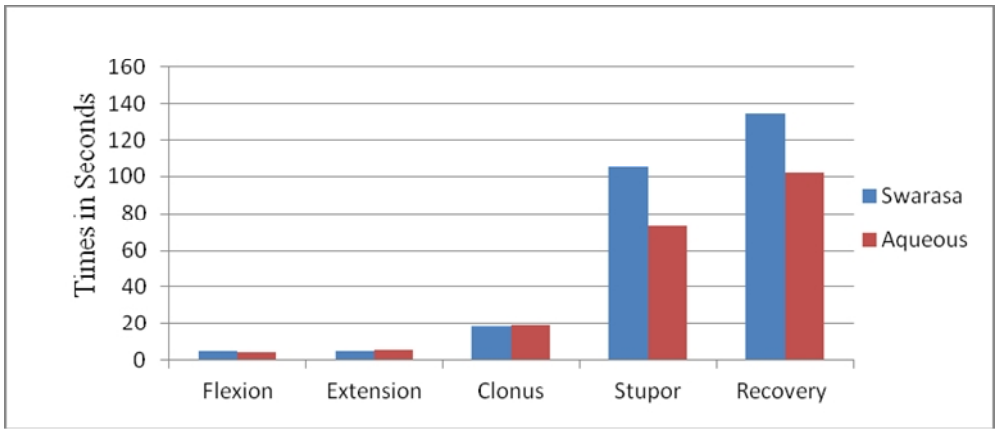

Fig.1 Graphical presentation of comparison between swarasa and aqueous group

DISCUSSION & CONCLUSION

The maximal electroshock test is the most widely used animal model in evaluation of antiepileptic drugs. The present study reveals that screening of antiepileptic activity of both Swarasa (Juice) and aqueous extracts on albino rats using MES induced method shows; Swarasa (Juice) at the dose of 0.9 ml/200 gm of rat shows significant protection against shock-induced convulsions (Significant at the level of $P<0.05$). Aqueous extract at dose 100mg/200 gm of rat shown lesser protection compare to the swarasa (Significant at the level of $P<0.05$)**.** The results of test groups are statistically significant when compared with control group and shows insignificant with standard group.

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