



## SCREENING OF ANTIEPILEPTIC ACTIVITY OF HINGU (*FERULA NARTHEX* BLOSS) ON ALBINO RATS

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### ABSTRACT

Alcohol and Aqueous extracts of Hingu (Resinous exudates of *Ferula narthex* Bloss) were as tested to screen anti-epileptic effect on albino rats by using MES Method. Results were analyzed using unpaired “t” test, and found that aqueous extract has shown significant (at the level  $P < 0.001$ ) result in controlling Maximal electro-shock induced convulsions.

**Keywords:** Hingu, Antiepileptic, MES

### INTRODUCTION

Hingu is resinous exudate of *Ferula narthex* Bloss belonging to family Umbelliferae<sup>1</sup>. In Ayurveda Hingu is an ingredient of various formulations like Hingwadya Ghrita and Bhootabhirava Rasa<sup>2</sup> which are indicated by various authors in the management of Apasmara (Epilepsy) and Grahadosha<sup>2</sup>. Hingu is mentioned by Bhavaprakasha as “Apasamar Haram Param” i.e. drug of choice in Apasamar<sup>3</sup>. Hence to validate the effect of hingu in the management of Apasmara on the basis of current research methodology this study was conducted to screen the antiepileptic effect of alcohol and aqueous extract of hingu on albino rats using Maximal Electro-shock method.

### Aims and objectives

Screening of Antiepileptic activity of Hingu (*Ferula narthex* Bloss) was carries out on albino rats in MES induced convulsions.

### MATERIALS AND METHODS

Test Drug Hingu was procured from four different markets viz Belgaum, Mumbai, Pune and Mysore. All these samples were subjected to Physico-chemical and Phytochemical tests. Sample of API standards was selected for the study. Experimental studies were conducted in the Department of Pharmacology, K.L.E. University's J.N. Medical College Belgaum, in Karnataka.

### Standardization of the test drug

Test drug was subjected for physico- chemical and phyto-chemical studies including HPTLC and quantitative resin estimation. After ensuring the quality standards as per the API, the drug was taken for Experimental study.<sup>4</sup>

### Dose fixation

LD<sub>50</sub> study of both extracts on albino mice revealed that the dose up to 5000 mg/kg body weight did not produce any symptoms of toxicity so it was evident that till 5000 mg/kg body weight dose of Hingu is safe. Hence 1/10th of this dose i.e. 500 mg/kg body weight was considered as therapeutic dose for animal experiment<sup>5</sup>.

### Experimental study

#### Housing and feeding of animals

Rats of either sex were procured from Animal House KLEU J N Medical College weighing between 110 gm to 180 gm and maintained at room temperature of 25<sup>0</sup>C, with 12 hrs day and dark cycles. The standard laboratory diet was given with an unlimited supply of drinking water.

Ethical clearance was obtained during Ethical clearance committee meeting conducted on 23/12/2006 at BMK Ayurveda Mahavidyalya, Shahpur, Belgaum, Karnataka, India.

#### Preparation of animals

The animals were randomly selected, marked to permit individual identification and kept in cages for one week prior to the experiment in order to allow for acclimatization and laboratory conditions.

#### Screening of anti-epileptic activity

##### Preparation of doses /vehicle

The aqueous extract was semisolid hence it was triturated with distilled water and alcohol extract was triturated with 2% Tragacanth mucilage to prepare dose.

##### Administration of doses

Animals were fasted for 24 hrs prior to dose administration. The test drugs were orally administered in a single dose by using a stomach tube.

##### MES Method

An electrical stimulus of sufficient intensity was used to induce maximal seizure by means of an external device stimulator or convulsimeter. A supra maximal strength of 150mA was used 0.2 seconds. The stimulus was applied via corneal or ear clip electrodes. MES seizures remain the primary screening for potential antiepileptic activity.<sup>6</sup>

##### Threshold test

The ability of the drug to alter the seizure threshold for tonic hind limb extension was determined as the current or voltage inducing hind limb extension in 50% of the animals.

**Procedure**

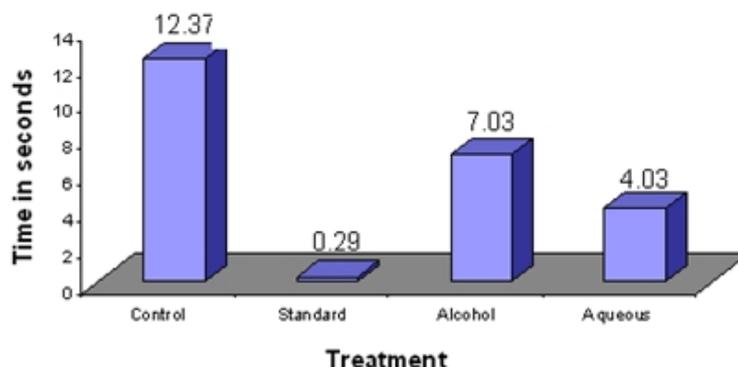
Animals were divided into four groups each consisting of 6 rats. The first group was used as control and for the second group phenytoin as a standard drug was given. The groups third and fourth were given aqueous and alcoholic extract of test drug respectively. The animal was held properly, electrodes were attached to ear pinna. Then the prescribed current 150mA was applied to the electrodes and different stages of convulsions were noted as a) tonic flexion b) tonic extensor phase c) clonic

convulsions d) stupor e) recovery or death. The time spend by each animal in each phase was recorded. Injection phenytoin was given intra-peritoneal to the second group, Aqueous and Alcoholic extract was given orally to the third and fourth group respectively. After 30 minutes the animals were subjected for electro convulsions as described earlier. Reduction in time or abolition of tonic extensor of MES convulsions was recorded.

**RESULTS**

**Table 1: Statistical results showing Mean of the Flexion, Extension, Clonus and Stupor**

	Control Group Distilled water 1 ml/rat Orally	Standard Group 25mg/kg wt ip	Alcohol 500mg/kg wt Orally	Aqueous 500mg/kg wt Orally	Significance
<b>Flexion</b>	3.82 Sec	0.18 Sec	2.28 Sec	1.29 Sec	P<0.001
<b>Extension</b>	12.37 Sec	0.29 Sec	7.03 Sec	4.03 Sec	P<0.001
<b>Clonus</b>	6.68 Sec	10.71 Sec	2.22 Sec	1.59 Sec	P<0.001
<b>Stupor</b>	159 Sec	25.7 Sec	111 Sec	96.67 Sec	P<0.001



**Figure 1: Abolition of Hind Limb Extension**

**DISCUSSION**

In Ayurvedic literature Hingu is described as one the best drug for the management of Apasmara where convulsions are the Cardinal clinical symptoms. Experimental study revealed that aqueous extract of Hingu showed significant results in controlling the convulsions but as compared to the standard drug Phenytoin results were not significant. In Ayurvedic texts Hingu was indicated to treat Various CNS related diseases often in the form of medicated ghee. This may be due to Hingu may cross brain tissues through the fat media than aqueous media.

**CONCLUSION**

Aqueous extract of hingu at 500 mg/kg body weight shown significant (p < 0.001) protection against shock-induced convulsions. Alcohol extract shown lesser

protection at same dose compare to the aqueous extract. The results of test groups compared with standard group were not statistically significant.

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