IJAYUSH
International Journal of AYUSH
AYURVEDA, YOGA, UNANI, SIDDHA AND HOMEOPATHY
http://internationaljournal.org.in/journal/index.php/ijayush/

International Journal
Panacea
Research library
ISSN: 2349 7025

Original Research Article **Volume 15 Issue 02** **February 2026**

PHARMACEUTICO-ANALYTICAL AND EXPERIMENTAL STUDY OF SAINDHAVA HINGUVADI GHRITA WSR TO ITS ANTIEPILEPTIC EFFECT

***Dr Dhanyasree G R[1] and Dr Asha P N[2]**

[1]Assistant Professor, Department of Rasashastra and Bhaishajya Kalpana, Mangalayatan Ayurveda Medical College and Research Centre, Beswan, U P.

[2]Professor, Department of Rasashastra and Bhaishajya Kalpana, M V R Ayurveda Medical College, Parassinikadavu, Kannur.

*Corresponding Author's Email: dhanyasreerajan@gmail.com

ABSTRACT

Bhaishajya Kalpana is a branch of Ayurveda which deals with the preparation of many formulations. Sneha Kalpana is a unique method of preparation which coming under Bhaishajya Kalpana. Sneha Kalpana helps to utilise fat soluble and water soluble properties of drugs. Among four snehas Ghrita is the best one. It is stated as Sarvasnehottama and Samskarasyanuvartanam. The present study is concerned with the formulation Saindhava Hinguvadi ghrita which is mentioned in Charaka Apasmara Chikitsa. In classics many ghrita preparations are mentioned under Apasmara Chikitsa. Many are not explored for its therapeutic efficacy. Till now no scientific studies have been carried out in this formulation. The aim of the study is to scientifically establish the anti epileptic effect of Saindhava Hinguvadi ghrita. Physicochemical analysis was also done to evaluate the study. Methodological section was divided into three parts, pharmaceutical study, analytical study, experimental study. Three samples of Saindhava Hinuvadi ghrita were prepared and assessment of sneha paka was done according to Acharya Sarangadhara. The analysis was done using parameters like Specific gravity, Loss on drying, Viscosity, Refractive index, Acid value, Iodine value, Peroxide value, Saponification value and Instrumental parameter, HPTLC were also done. Pharmaceutical study showed difference in time duration in sample I to

attain mridupaka compared to others. Percentage of yield was higher in Sample Ⅱ. Analytical study revealed as follows:- Specific gravity revealed addition of active constituants of the drugs to ghrita, was increased in all samples. Refractive index was same in all samples. Viscosity values showed decrease in all samples. LOD showed less moisture content in all samples. Results of Acid value, Iodine value and Peroxide value showed increase in unsaturation. Saponification value denotes greater percent of short chain acids in all samples. HPTLC showed the presence of active compounds in samples compared to plain ghrita. Experimental study revealed as follows:- Saindhava Hinguvadi Ghrita showed statistically nonsignificant results in experimental study.

Key words: Bhaishajya kalpana, Sneha kalpana, Saindhava hinguvadi ghrita, Charaka Apasmara chikitsa, Antiepileptic effect, Experimental study.

INTRODUCTION

Ayurveda is a system of healing unlike any other, offering a unique approach to health care in the form of self discovery with its roots in ancient India. Ayurveda is a tradition thought to be over five thousand years old[1]. The name Ayurveda is derived from two words in Sanskrit, ayuh‘ meaning life‘ or longevity and veda meaning `science‘ or sacred knowledge. So it is the science of longevity. The earliest known references of Ayurveda appeared in scholarly texts from the time called vedic era[2].

In classics definition of Ayurveda is mentioned as – that science is designated as Ayurveda where advantageous and disadvantageous as well as happy and unhappy states of life along with what is good and bad for life, its measurement and life itself are described[3].

Aim and objective of the science Ayurveda mentioned in classics is it helps to maintain the health of a healthy individual and cure of diseases of a patient[4]. In classics eight branches of Ayurveda are mentioned. They are Kaya, Bala, Graha, Urdhvanga, Salya, Damstra, Jara and vrsa. Baishajya Kalpana is not mentioned as a branch among these. But still it proved its own significance in these eight branches.

In the steps of evolution as he grew cultural and intelligent by this experience, he became smart enough to identify the medicinal properties in the plants around him. Gradually he tried to make those medicinal plants more palatable and more pleasing to his sense organs by changing their forms to swarasa, kalka etc. This act of changing the forms of natural

medicinal plants becomes the begining of Bhaishajya Kalpana. There is no focus laid on this branch, since the essence of this subject is scattered in all eight branches. In later periods, all the scattered information of this was compiled and a separate name `Bhaishajya Kalpana' was given to it[5].

The word Bhaishajya Kalpana is composed of two words- bhaishajya' or bheshaja' and kalpana. The word bheshaja or bhaishajya means that which wins the fear of disease or restores the health of a person by stabilizing the doshas. The word kalpana means the process or the method employed for the preparation of pharmaceutical products. The science which deals in detailed about the preparation of different medicines is called Bhaishajya Kalpana. Safety, efficacy, stability and palatability are the four basic requirements of a good drug dosage form[6].

Sneha Kalpana is a unique dosage form in Ayurveda. It may be defined as —A pharmaceutical process to prepare oleaginous medicaments from the substances like kalka, kwatha, dradravya taken in specific proportion and by subjecting them to unique heating pattern and duration to fulfil certain pharmaceutical parameters, according to the need of therapeutics[7].

Sneha Kalpana helps to utilise the fat soluble and water soluble properties of drugs. In classics many sneha preparations are mentioned under Apasmara Chikitsa. Saindhava Hinguvadi Ghrita is such a preparation mentioned by Charakacharya in Apasmara Chikitsa.

Approximately fifty million people currently live with epilepsy world wide. Globally estimated 2.4 million people are diagnosed with epilepsy each year[11]. Prevalance in India is 5.59-10/1000. Prevalance is higher in rural compared to urban. There is high of premature mortality in people with epilepsy[8].

Epilepsy contributes a variety of medical, social, physiological and economic burdens. The impact of disease is experienced in all aspects of patient's life and also some extend to the family[9].

In classics it is mentioned that among four snehas, Ghrita is the best one and it is stated as sarvasnehottama, samskarasyanuvartanam[10]. Its daily usage increases dhi, smriti, medha[11]. Many ghrita preparations mentioned in classics are still not proved for its therapeutic efficacy. The preparation, analysis and experimental study of Saindhava Hinguvadi Ghrita is a trial to assess its antiepileptic effect in animal model.

EXPERIMENTAL

In the current study, the test drug Saindhava Hinguvadi Ghrita was evaluated for its anti-convulsant activity through two models. PTZ induced chemo convulsion in mice and PTZ induced kindling in mice.

Aim: The current study was aimed to evaluate the anti-epileptic activity of Saindhva Hinguvadi Ghrita by generalised PTZ induced seizure method and PTZ induced Kindling and staging method.

Objectives: To compare and evaluate the anti-epileptic activity of Saindhava Hinguvadi Ghrita through experimental study.

Test drugs: The sample of Saindhava Hinguvadi Ghrita was prepared as per standard references in Department of Rasasashtra and Bhaishajya Kalpana, MVR Ayurveda Medical College, Parassinikadavu, Kannur.

Experimental animal :- 48 Swiss albino mice were randomly selected and divided into 4 groups for PTZ induced chemoconvulsion study and into 4 groups for PTZ Induced Kindling study respectively.

Inclusion criteria: a) Animals will be selected are adult Swiss albino mice having weight from 30-40 g. b) Animals selected will be of both sexes. c) Active and healthy mice. Exclusion criteria: a) Weight range below 30 g and above 40 g. b) Mice, which were used for other studies previously. c) Pregnant and diseased mice.

Mice maintenance: Swiss Albino mice were obtained from animal house attached to S.D.M. Centre for Research in Ayurveda and Allied Sciences, Udupi, Karnataka. They were maintained on feed of ―Sai Durga Feed and Food, Banglore and tap water was given ad libitum. The temperature and humidity were kept at optimum and animals were exposed to natural day-night cycles. The experiments were carried out in a conformity with guidelines of Institutional Animal Ethical Committee (SDMCRA/IAEC/MV-R-10) after obtaining its permission.

Examination of the animals prior to the experiment: All the Swiss Albino mice were subjected to general check for weight. Weight of each animal was checked by using weighing machine and the dose was calculated according to Paget and Barne‘s formula (Paget and Barne‘s 1964) involving body surface area ratio and human dose. The cages were labelled with name of the

group and drug.

Reference and Standard Drug: The reference standard drug used for antiepileptic activity evaluation was Diazepam. It was purchased from the market - Diazepam tablets I.P 5 mg, Mfd - July 2019, Exp - June 2022, Manufactured by Elkem Pharmaceuticals Pvt (Ltd), Ganthinagar (Dt), Marketed by Dellwich Healthcare LLP, Ahmedabad, Gujarat.

Chemical for inducing seizure: Pentylenetetrazole was used as a chemical for inducing the seizures in mice for evaluating the anti-epileptic activity experimentally. Chemical procured from HiMedia Laboratories Pvt. Ltd, Mumbai, India with the name Pentamethylene tetrazole (5 gm), PKD; 04/2011 and is of analytical grade regularly used in the laboratory.

Equipments: 1. Physical balance 2. Animal weighing machine 3. Measuring jar 4. Syringes 5. Stop watch 6. Animal cages.

Grouping of animals:

A day prior to dosing, the selected animals were divided into different groups by randomization method.

Groups of animals:

Group 1 Positive control; Group 2 Standard drug: Diazepam; Group 3 Test drug: Saindhava Hinguvadighrita (TD); Group 4 Test drug: Saindhava Hinguvadi Ghrita (TD×2).

Dose fixation Dose calculation of trail drug for mice = 0.0026 * human dose * 50/kg body weight.

Here the human dose of Saindhava Hinguvadighrita is 48 ml (1 pala).

Therefore Dose = Human dose * 0.0026 * 50/kg body weight

= 48 * 0.0026 * 50/kg body weight

= 6.24 ml/kg body weight.

Dose calculation for Reference Standard (Diazepam): Mice dose = 8 mg/kg body weight.

Dose calculation of Pentylenetetrazole for Generalised PTZ induced seizure: Mice dose = 80 mg/kg body weight.

Dose calculation of Pentylenrtetrazole for PTZ induced kindling and staging study: Mice dose = 40 mg/kg body weight.

Drug preparation

Test drug: The samples of Saindhava Hinguvadighrita were prepared as per standard references in Department of Rasasashtra and Bhaishajya Kalpana – MVR AMC, Kannur

Diazepam: The solution of diazepam was prepared by taking 5 mg tablet and dissolving in 10 ml distilled water.

PTZ Solution:

a. For Generalised PTZ Induced Seizure study (80 mg/kg): A stock solution containing 80 mg of PTZ and 10 ml of distilled water was prepared.

b. For PTZ Induced Kindling (40 mg/kg): A stock solution containing 40 mg of PTZ and 10 ml of water was prepared.

Route of drug administration: Positive control, standard drug and test drug would be administered according to body weight of the animals by oral route and PTZ was injected intraperitoneally for inducing seizures.

Methodology: Antiepileptic activity was assessed by two different methods:

a) Pentylenetetrazole Induced Seizure Method: The animals were administered test drug and reference standard drug to respective group by oral route for 21 days. On the 22nd day, one hour after drug administration, they were subjected to chemo-convulsion by injecting Pentylenetetrazole (PTZ) intra peritoneal in the dose of 80 mg/kg. The effect of different treatment on PTZ convulsion profile was noted down. The parameters to be measured were

• Latency of onset of clonic and tonic convulsions

• Reccurence of clonic or tonic convulsion

• Myoclonic twitches, mortality

• Any other abnormal changes in the behavior.

Abolishing of the clonic convulsion was considered as the index of convulsion activity.

b) Pentylenetetrazole Induced Kindling Method: For kindling induction, Pentylenetetrazole (PTZ) was freshly dissolved in normal saline and a sub-convulsive dose of 40 mg/kg, ip was administered every other day for a total of around 12 injections. After each injection of the subconvulsive dose of PTZ, mice in different groups was observed for 35 min and PTZ

induced seizures was evaluated and classified according to the scoring system of Fischer and Kittner - 1998.

- 1 - Ear and facial twitching, head nodding;
- 2 - Myoclonic jerks;
- 3 - Generalized clonic convulsions rearing, jumping and falling down,
- 4 - Clonic-tonic convulsions, tonic hind limb extensions.

The mean seizure stages were calculated for all groups after each PTZ injection.

The scores from the test formulation and reference standard groups were compared to positive control group.

RESULTS

Observations and results are analysed by one way anova followed by Dunnets multiple comparison t-test as post-hoc test, if $p < 0.05$ using grah pad instat soft ware.

A = Control test group

B = Standard group

C = Test group Ⅰ

D = Test group Ⅱ

If P value is < 0.05 - Statistically significant, denoted by *

If P value is > 0.05 – Statistically non significant

If P value is < 0.01 - Statistically very significant, denoted by **

Parameter	**Group A (positive control)**	**Group B (standard)**	**Group C (Test group I)**	**Group D (Test group II)**
LOS	58.016±12.98	0± 0	114±23.74	105.83±28.01
MJ	10±.8367	0± 0	31.25±15.92	15.8±6.24
ST	6.16±1.04	0± 0	20±12.81	6.83±2.61
CC	5.66±1.47	0± 0	1.2±0.73*	3.16±1.01
RT-CC	0± 0	0± 0	1.2±0.58*	0.66±0.21

DD	8.31±1.19	0± 0	0± 0	7.64±1.53
ET and HN	245.5±52.17	246.83±50.81	461±70.24	415.16±126.54
MJ	453 ± 181.51	105.5± 42.77	105.5±42.77	450.66± 90.96
FLC	5.66± 1.28	0± 0	2 ±1.512	1.83 ± 0.87*
GCC Rearing, Jumping, Falling down	1.83±0.47	0± 0	0.42± 0.2** Data:Mean±SEM **p<0.01**p<0.01	1± 0.4
CTC, THLE	0.16± 0.16	0± 0	0± 0	0± 0
TC	706.83± 154.37	352.33± 79.76	1274.37± 227.08	870.5±168.32
TMJ	453 ±181.51	104.66 ±42.71	812.75 ±177.45	451± 89.98
ET and HN (peak10-20min)	89.83 ±17.77	82.83± 17.46	155.37± 24.86	146.16 ±45.29
MJ(peak10-20min)	146.66± 68.32	32± 11.24	312.12 ±78.46	145± 32.52
FC (peak 10-20min)	1.66± 0.42	0± 0	0.12 ±0.12** DATA :Mean±SEM **p<0.01**p<0.01**p<0.01	0.33± 0.21**
GCC R,J,F (peak10-20min)	0.5± 0.34	0± 0	0.12± 0.12	0.66± 0.49
CTC,THLE (peak10-20min)	0± 0	0± 0	0± 0	0± 0
TC (peak10-20min)	238.6± 62.12	114.83± 24.11	467.97 ±91.66	292.16± 61.17

DISCUSSION

Saindhava Hinguvadi Ghrita – It is mentioned in Charaka Apasmara chikitsa. The ingrediants mentioned are ghrita, saindhava lavana, hingu, rishabha mutra, basta mutra (male goat urine). Sneha kalpana – Almost every classics of Ayurveda define very systematically about the preparation of medicated taila and ghrita (oil and ghee), worth to mention here are Charaka Samhita, Sushruta Samhita and Ashtanga Hridaya. However, Sharangdhara Samhita is considered as best book for pharmaceutical details of different herbal dosage forms. In Sneha Kalpana, ghrita kalpana can be considered as sreshta, because of special property of ghrita ie, samskarasyaanuvartanam, that means it is having the power to assimilate the properties of other substances effectively with which it is processed. There is no other snehadravya except ghrita which has this tremendous property. It also has the capacity to transform itself when added with other substances as the qualities of these substances get imbibed into it. Ghrita does not give up its own properties even if it is mixed with substances possessing other properties.

Study of Anti-convulsant acivity - According to Charaka Samhita the test drug Saindhava Hinguvadi Ghrita can be used in Apasmara chikitsa. In order to ascertain its anti-epileptic activity, experimental study was carried out in 2 models; PTZ Induced Generalised Seizures in Swiss Albino mice and PTZ Induced Kindling in Swiss Albino mice. The results obtained in these models can be interpreted as follows.

1. Anti-convulsant activity by pentylenetetrazol (PTZ) induced generalised seizures:

On evaluating the anti-convulsant activity by PTZ induced convulsions it was observed that in the positive control group the survival rate was zero. In Test Group Ⅰ and standard group death was absent. In Test Group Ⅱ survival rate was zero. Latency of death was less compared to positive control group. Test Group Ⅰ exhibited increased latency of onset of seizures compared to positive control group and increased number of myoclonic jerks, increased number of straub tail occurance. There was a decrease in number of clonic convulsions compared to positive control group. There was an increase in number of reccurrance of tonic-clonic convulsions and duration of reccurence. In Test Group Ⅱ there was an increase in latency of onset of seizures compared to positive control group. Number

of myoclonic jerks and number of straub tail occurance was also increased and decrease in number of clonic convulsions. There was an increase in number of reccurence of tonic-clonic convulsions and duration of reccurence. On assessing the efficacy of Saindhava Hinguvadi Ghrita in Test Group, it was effective in controlling some of the parameters even though the results were statistically non significant. Survival rate of Test Group Ⅰ was 100%. So a moderate effect of Test Drug was observed in Test Group I. In test group Ⅱ it was effective in controlling some of the parameters even though the results were statistically non significant, but the survival rate of Test Group Ⅱ was zero and there was no effect on latency of death. So only a mild effect of test drug was observed in Test Group Ⅱ.

Thus Saindhava Hinguvadi Ghrita can be administered as a markable adjuvant for main stream Anti-epileptic drugs.

2. Anticonvulsant activity by pentylenetetrazol (PTZ) induced kindling mice:

The positive control group mice developed all grades of convulsions and seizures were more severe. The seizure sevearity after successive injections were increased and day by day mice became weak. Repeated kindling decreased the resistance to sustain convulsions. The test drug Saindhava Hinguvadi Ghrita exerted inhibition of kindling effect from the first day of injection. The stages of convulsions were very well controlled even though there was no complete cessation of seizure activity. Ear and facial twitching, myoclonic jerks and forelimb clonus ie, upto 3rd grade of convulsion were the stages of convulsions that were exhibited by most of the mice till the last injection. There was an increase in number of face twitching/head nodding in Test Group Ⅰ, Test Group Ⅱ and Standard Group compared to positive control group and the observed increase was statistically non significant. There was a decrease in number of myoclonic jerks in Test Group Ⅰ, Test Group Ⅱ and Standard Group compared to positive control group. The observed decrease was statistically non significant. The number of forelimb clonuses were decreased in Test Group Ⅰ and Test Group Ⅱ compared to positive control group. The observed decrease was statistically non significant. In standard group there was absence of forelimb clonuses. The number of clonic-tonic convulsions in Test Group Ⅰ, Test Group Ⅱ and Standard Group were decreased compared to positive control group. The observed decrease was statistically non significant. According to the present study, the test drug Saindhava Hinguvadi Ghrita proved to be significantly

helpful in supressing the development of kindled seizures in mice ie it is helpful for inhibiting epileptogenesis and developing a potential seizure threshold.

One of the major differences found in both the test groups was that all the mice were active till the last day of kindling indicating that long term administration of these drugs may not produce psychological or sedation effect. It was observed that in standard group all the mice became weak day by day after kindling and sedation effect was evident in standard group.

Discussion on probable mode of action of drugs

A. Probable mode of action of Diazepam (Reference Standard Drug):

Benzodiazepines play protuberant roles in the therapy of Epilepsy. Although many benzodiazepines are alike chemically, subtle and structural alterations result in variances in activity and pharmacokinetics. They have two mechanisms of anti seizure actions.

GABA is a major inhibitory neurotransmitter in the CNS. Electro physiologic studies have revealed that benzodiazepines potentiate GABAergic inhibition at all levels of neuronal axis, including the spinal cord, hypothalamus, hippocampus, substantianigra, cerebellarcortex, cerebralcortex. Benzodiazepins seems to increase the adaptness of GABAergic synaptic inhibition. The benzodiazepins do not substitute for GABA but appear to enhance GABA‘s effect in high level but without directly activating GABA receptors or opening the associated chloride channels. The augmentation in chloride ion conductance induced by the interaction of benzodiazepins with GABA takes the form of an increase in the frequency of channel-opening events.

Benzodiazipines accelerate the action of GABA in the central nervous system. Diazepam acts at GABAA synapses and its action in reducing spasticity is at least partly mediated in the spinal cord because it is marginally effective in patients with cord transection. Although diazepam can be used in patients with muscle spasm of almost any origin (including local muscle trauma), it also produces sedation at the dose required to reduce muscle tone.

Diazepam is highly effective for stopping continuous seizure activity, especially generalized tonic-clonic status epilepticus.

B. Probable mode of action of PTZ:

The exact mechanism of pentylenetetrazole (PTZ) action is not well understood. It is believed that its main action is mediated by its binding to the post synaptic GABA receptors. By

competing inhibition, PTZ antagonizes the GABA activated current and reduces the frequency of chloride channel in a concentration-dependent manner. Thus, PTZ lowers the depolarization threshold which results in hyper-excitability of the cells or group of cells in the critical areas in the CNS leading to convulsive episodes.

Lukomskaya and co-workers have proposed that glutamatergic synaptic transmission plays an imperative role in the weakening of GABAergic inhibitory processes induced by PTZ. It is likely that the test drug Saindhava Hinguvadi Ghrita modulate these neurotransmitter systems to produce the observed effect. They may be interfering with the PTZ induced lowering of excitatory threshold or they may be acting directly to counteract the threshold decreasing effect of PTZ by modulating the ion-channels involved. The exact mechanism needs to be elucidated.

Drugs defending against tonic-clonic seizures induced by PTZ are considered useful in controlling myoclonic and absence seizures in humans. Based on the observed results, it can be recommended that the test drug possesses moderate anticonvulsant activity which is supportive of the use of this drug in the traditional systems of medicine.

Probable mode of action of Saindhava Hinguvadi Ghrita:-

Probable mode of action of ghrita:- Sneha Kalpana is widely explained by acharyas under the contexts related to the vikaras of dhi, buddhi, sattva vibhrama. Some of the qualities of ghrita mentioned by acharyas are:- samskarasyanuvartanam, dhivardhaka, smritivardhaka, medhavardhaka, agnivardhaka, unmadaharam, apasmaraharam, mathivardhaka, rasayanam, vishaharam, hridyam.

The action of ghrita on mental functions is already proved. Sneha kalpana is given due consideration because of its digestibility coefficient which is proven to be highest of all oils and fats. Along with digestibility, absorption and delivery to a target organ system are very crucial in obtaining the maximum benefit of any formulations.

Lipophilic action of ghee assists transportation to a target organ and final delivery inside the cell because the cell membrane also contains lipid. This lipophilic action of ghee aids in the absorption of the active principles of the drugs in a formulation into the cell and its delivery to the mitochondria, microsome and nuclear membrane. It is proven that when herbs are processed with ghee, there will be potentiation of activity.

Ghee also contains Vitamin-A, D, E, K. It thus imparts anti-oxidant effect to the body. Also formulations with ghee as base can cross blood-brain barrier which may be the probable reason for the wide spectrum of both psychological and neurological indications under the umbrella of ghritaprayoga in diseases. Acharya Sushrutha has specifically quoted the indication as Apasmara in the context of Ghrita. The other potential gunas of ghrita explained in various treatises which exhibits its effects in a chiravyadi - Smritivardhaka, Agnideepaka, Balavardhaka, Ayushya, Vishahara, Medhya, Rakshoghna, Ojovridhikara, Unmadahara, Hridya, Dhidayaka etc.

Probable mode of action of Hingu:-

Hingu is having a katurasa, ushnavirya, tikshnalaghuguna, karma of Dipana pachana, krimighnam, hridyam, samjnasthapanam.

On analysing the Rasa panchaka of Hingu, it can be concluded that the Antiepileptic effect may be because of the properties like:

Deepana-Pachana-Since Apasmara is a chronic disorder, agni should be corrected through out the disease. So this guna will be helpful for maintaining the agni and thus can be helpful for treating the disease.

Hridya: According to the classical references, Hridaya which is considered to be the sreshtaayatana along with other dhamanis are afflicted in Apasmara. So drugs having Hridya property might have a positive impact on Apasmara vyadhi.

Samjnasthapana- Samjna means budhi. As impairment of budhi is one of the feature in apasmara vyadhi, this guna will enhance the apasmarahara property of the formulation.

Krimighna-Acharya has explained the Aharaja nidanas in which samala, asuchi aharas have been included which may further lead to the involvement of krimi; eg in case of Epilepsy due to parasitic CNS, involvement of krimi is considered as an etiology.

Probable mode of action of Saindhava lavana:-

Sindhava lavana is having Madhura rasa, laghu-sukshma guna, Sita virya, having karmas of Dipana pachana, tridoshaharam, hridyam, pathya.

Tridoshahara-This quality of the dravya will help in balancing the shareerika doshas and also manasika doshas to an extent.

Hridya-According to the classical references, hridaya which is considered to be the sreshtaayatana along with other dhamanis are afflicted in apasmara. So drugs having hridya karma might have a positive impact on Apasmaravyadhi.

Probable mode of action of mutras:-

In classics acharyas mentioned about properties of animal mutras ie, female animal mutras. There is no mentioning about basta mutra (male goat urine) and rishabha mutra (bull‘s urine). It is mentioned that female mutras are sreshta because it possess more tikshna and laghu guna. Male mutras having less tikshnaguna and guru guna, so it is not sreshta. In apasmara chikitsa acharyas mentioned about preparations containing animal mutras (female mutras). But here in this preparation —Saindhava Hinguvadi Ghrita, Charakacharya mentioned that female mutras should not be taken for the preparation. This may be the reason:- Apasmara is a chirakalina vyadhi, so for the treatment purpose drugs possess more tikshna, laghu, sukshma gunas should be used. Here in this particular preparation Hingu and Saindhava are other ingrediants which possess more tikshna, laghu, sukshmaguna. While adding female mutras into this there will be further increase in tikshna, laghu, sukshma guna. It may cause adverse effects in human body.

According to samanya mutra gunas mentioned by acharyas, probable mode of action of mutras can be due to:-

Tridoshahara – This will help to balance both saririka and manasika doshas up to an extent. So this can promote the apasmarahara property of the ghrita.

Hridya – As hridaya and dhamanis are involved in apasmara samprapti, hridyaguna can enhance the apasmarahara property of the formulation.

Dipana-Pachana – As apasmara is a chirakalinavyadhi treatment duration is also more. So during the treatment period agni of patient should be maintained.

So this will be helpful to maintain the agni and there by enhance the apasmarahara property.

To sum up, Saindhava Hinguvadi Ghrita may not have highly significant role as an anti-convulsant. It may act upon the seizure threshold of the individual. It can also be administered as an adjuvant with other commonly used A E Ds to check its cognitive and psychological side effects.

REFERENCES

1. World Health Organization. Essential medicines and health products information portal [Internet]. Available from:

   http://apps.who.int/medicinedocs/en/al/Jh2943e/8.4html

2. Ayurveda – healing science [Internet]. Banyan Botanicals. Available from: https://www.banyanbotanicals.com
3. Sharma RK, Dash VB. Agnivesa's Caraka Samhita (Ayurveda Dipika of Cakrapanidatta, English translation). Vol. 3. Varanasi: Chowkhamba Sanskrit Studies; 2017. p.25 (1/41).
4. Sharma RK, Dash VB. Agnivesa's Caraka Samhita (Ayurveda Dipika of Cakrapanidatta, English translation). Varanasi: Choukhamba Sanskrit Studies; 2017. p.601 (30/26).
5. Angadi R. A Text Book of Bhaishajya Kalpana Vijnana. Varanasi: Chaukhamba Surbharati Prakashan.
6. Angadi R. A Text Book of Bhaishajya Kalpana Vijnana. Revised edition. Varanasi: Chaukhamba Surbharati Prakashan; 2016. p.4.
7. Onten CS, Chaudhary VK. Study of stability (saviryatha avadhi) of samanya and panchavartita panchatikta ghrita (MD Ayurveda dissertation). Varanasi: Banaras Hindu University; 2009.
8. Nandanavana S, Reddy S, Sinha S, et al. Annals of Indian Academy of Neurology [Internet]. 2014 [cited 2006 Mar 1]. Available from: https://www.ncbi.nlm.nih.gov
9. Subedi et al. Knowledge, attitude and stigma in epilepsy: A study from a tertiary care centre in Nepal. Health Renaissance. 2014;12(1):11. Available from: https://pdfs.semanticscholar.org
10. Trikamji AJ, editor. Charaka Samhita of Agnivesha (Ayurveda Dipika of Chakrapanidatta, Sanskrit commentary). Varanasi: Chaukhamba Surbharati Prakashan; 2005. p.82 (13/3).
11. Sastri HS, Paradakara H. Astangahrdaya of Vagbhata (Sarvangasundara of Arunadatta, Ayurvedarasayana of Hemadri, Sanskrit commentary). Varanasi: Chaukhamba Surbharati Prakashan. p.24 (16/8).