

MAHA PANCHAGAVYA GHRITA IN APASMARA (EPILEPSY) – A KETOSIS PERSPECTIVE

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ABSTRACT

Epileptic seizures are caused due to imbalance in the excitatory and inhibitory neurotransmitters. Serum electrolytes like sodium, potassium and calcium play a key role in maintaining the epileptic threshold. In the quest of effective treatment in epilepsy ketogenic diet has been promising. It is found to increase the inhibitory Gamma amino butyric acid and thus increase the epileptic threshold. In this context *Maha Panvhagavya Ghrita* recommended in the treatment of *Apasmara* seems to be the drug of choice.

Keywords: Epileptic threshold, Ketosis, Gamma amino butyric acid (GABA), *Maha Panchagavya Ghrita*

INTRODUCTION

Epilepsy is the fourth most common neurological disease. It has the dubious distinction of affecting all the walks of life of an individual suffering from the disease. There is an ambiguity that shrouds the disease regarding aetiology, pathogenesis and the therapy.

Though modern science boasts of many innovations opening new horizons in the field of research, a comprehensive knowledge regarding epilepsy is still in its infancy. There is an urgent need for retrospection and critical self-appraisal that would initiate casting away

of fragmented approach and adopting an integrated outlook. At this juncture, some of the concepts of *Ayurveda* regarding *Apasmara* project views which seem to contradict the presently held opinion. But it has to be borne in mind that these principles have stood the test of time and have offered solace to the ailing mankind through centuries. The ancient insights may have the potential to provide enlightenment and become beacons of light for modern discoveries. Some of the concepts which have currently dawned as accepted facts have striking similarities with those held in *Ayurveda*. The observation regarding the epileptic potential of

every individual varying only in provocation and the concept of epileptic threshold are gaining substantial prominence. These opinions were voiced vociferously by our *Acharyas* of yore. *Apasmara* has been described as a disease caused by the imbalance of *Rajo* (excitatory) and *Tamo* (inhibitory) *Gunas* and the management includes *Snehapana*. Epileptic threshold plays a main role either way in epilepsy. A low epileptic threshold causes seizures and a high epileptic threshold inhibits the onset of seizures¹. *Mahapanchagavya Ghrita* may induce an environment which elevates the epileptic threshold.

Ketosis and its effect on serum electrolytes

Table 1: enumerates the factors which induce and inhibit seizures

Factors which induce seizures ²	Factors which induce ketosis ³
Increase in excitatory glutamate neurotransmitter	Increase in inhibitory Gamma amino butyric acid
Decrease in serum sodium and serum calcium levels	Increase in serum sodium and serum calcium levels
Increase in serum potassium levels	Decrease in serum potassium levels

It is known that high level of fat and protein induce ketosis. The ketone bodies, β - hydroxybutyrate, acetoacetate and acetone are synthesized and are able to cross the blood- brain barrier to provide an alternative source of energy for the brain⁴

Drug Review: There are 42 drugs used in the preparation of *Maha Panchagavya Ghrita* in addition to Cow's milk, curds, ghee, urine and dung⁵.

Table 2: Shows the ingredients of *Maha Panchagavya Ghrita*

SL. No	Kvatha (~decoction) drugs	SL. No	Kalka (~ paste) drugs	Sl No.	Pancha Gavya
1 – 10	<i>Dashamula</i> – <i>Agnimantha</i> (<i>Premna mucronata</i>) <i>Patala</i> (<i>Stereaspermum suaveolens</i>) <i>Gambhari</i> (<i>Gmelina arborea</i>) <i>Bilva</i> (<i>Gmelina arborea</i>) <i>Syonaka</i> (<i>Oroxylum indicum</i>) <i>Brhati</i> (<i>Solanum indicum</i>) <i>Kantakari</i> (<i>Solanum xanthocarpum</i>) <i>Gokshura</i> (<i>Tribulus terrestris</i>) <i>Salaparni</i> (<i>Desmodium gangeticum</i>) <i>Prsniparni</i> (<i>Uraria picta</i>)	25	<i>Bharngi</i> (<i>Clerodendron serratum</i>)	43	Cow ghee
11-13	<i>Triphala</i> - <i>Haritaki</i> (<i>Terminalia chebula</i>) <i>Vibhitaki</i> (<i>Terminalia bellerica</i>) <i>Amalaki</i> (<i>Embelica officinalis</i>)	26	<i>Patha</i> (<i>Cyclia peltata</i>)	44	Cow milk
14	<i>Haridra</i> (<i>Curcuma longa</i>)	27–29	<i>Trikatu</i> - <i>Pippali</i> (<i>Piper longum</i>) <i>Shunthi</i> (<i>Zingiber officinalis</i>) <i>Maricha</i> (<i>Piper nigrum</i>)	45	Cow curds
	<i>Daruharidra</i> (<i>Berberis aristata</i>)	30	<i>Trivrut</i> (<i>Operculina turpethum</i>)	46	Cow urine

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16	<i>Kutaja</i> (<i>Holarrhena antidysenterica</i>)	31	<i>Nicula</i> (<i>Baringtonia acutangula</i>)	47	Cow dung
17	<i>Saptaparna</i> (<i>Alstonia scholaris</i>)	32	<i>Gajapippali</i> (Controversial drug. <i>Pippali</i> was used in its place)		
18	<i>Apamarga</i> (<i>Achyranthus aspera</i>)	33	<i>Adhaki</i> (<i>Cajanus indicus</i>)		
19	<i>Nilini</i> (<i>Indigofera tinctoria</i>)	34	<i>Murva</i> (<i>Marsdenia tenecissima</i>)		
20	<i>Katuki</i> (<i>Picrorhiza kurroa</i>)	35	<i>Danti</i> (<i>Baliospermum montanum</i>)		
21	<i>Aragvadha</i> (<i>Cassia fistula</i>)	36	<i>Bhunimba</i> (<i>Andrographis paniculata</i>)		
22	<i>Phalgumula</i> (<i>Ficus hispida</i>)	37	<i>Chitraka</i> (<i>Plumbago zeylanica</i>)		
23	<i>Pushkaramula</i> (<i>Inula racemosa</i>)	38 – 39	<i>Sariva Dwaya</i> - <i>Sweta Sariva</i> (<i>Hemidesmus indicus</i>) <i>Krisna Sariva</i> (Not available) <i>Sweta Sariva</i> was used in the place of <i>Krishna Sariva</i> due to unavailability		
24	<i>Duralabha</i> (<i>Fagonia critica</i>)	40	<i>Rohisha</i> (<i>Cymbopogan martini</i>)		
		41	<i>Yavani</i> (<i>Trachyspermum ammi</i>)		
		42	<i>Madayantika</i> (<i>Lawsonia inermis</i>)		

Maha Panchagavya Ghrita may induce ketosis due to the presence of fats in the form of cow's ghee and various amino acids present in the protein content of cow's milk, curds, urine and cow dung. The ketone bodies produced in turn may alter the blood brain barrier properties giving access to the active principles of the *Maha*

Panchagavya Ghrita to enter the brain. Many a time *Shodhana* may not be possible in *Apasmara*. But a look at some of the drugs used in the *Maha Panchagavya Ghrita* indicate that they belong to the *Shodhana* group.

Table 3: contains the drugs used in *Mahapanchagavya Ghrita* which act as emetic or purgative⁶

<i>Vamaka</i> (~emetic)	<i>Virechaka</i> (~purgative)
<i>Kutaja</i>	<i>Katuki</i>
<i>Nicula</i>	<i>Aragwadha</i>
	<i>Danti</i>
	<i>Nilini</i>
	<i>Trivrut</i>
	<i>Triphala</i> ⁷

Mode of action

Clinical trial with *Maha pancha gavye ghrita* showed that there was significant increase in serum sodium and serum calcium levels and decrease in serum potassium levels. ⁸Hence these drugs may bring about *Shodhana* to some extent and maintain the electrolyte balance thus bringing about equilibrium and maintaining a high epileptic threshold⁹

Shodhana which includes *Vamana*, *Virechana* induces changes in the serum electrolyte levels. It has been found in previous studies that *Vamana* and *Virechana* cause these changes in the serum electrolyte levels though it is insignificant¹⁰. *Virechana* caused increase in serum sodium and serum calcium levels and decrease in serum potassium levels¹¹. Therefore ketosis combined with change in serum electrolytes may bring

about a cumulative change. Hence the epileptic threshold is increased.

DISCUSSION

The paroxysmal epileptic seizures are caused by many triggering factors which bring down the epileptic threshold and cause change in the serum electrolyte levels. The cause of epilepsy has always remained an enigma. Ketogenic diet has been one area where researchers have found hope. Ketosis does not alter serum electrolyte levels passively but offers the brain an alternate fuel for carbohydrates. In clinical practise *Snehapana* including *Mahapancha gavya Ghrita* is used extensively in *Apasmara* in large doses. It induces ketosis because of the presence of fat and amino acids and helps in the elevation of the inhibitory gamma amino butyric acid. The presence of *Shodhana* ingredients may bring about changes in the serum sodium, serum calcium levels where they are elevated. The level of serum potassium is decreased. The cumulative effect brings about an elevation in the epileptic threshold.

CONCLUSION

Maha Panchagavya Ghrita brings about ketosis and increases the gamma aminio butyric acid (GABA) inhibitor as well as causes increase in the serum sodium and serum calcium levels and decrease in serum potassium levels. Epileptic threshold may be an environment which is characterized by all these features. Further studies with other *Snehas* in epilepsy may throw more light on the relation between *Apasmara* and ketosis.

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