10.37021/ijper.v4i2.02

REVIEW ARTICLE

Epilepsy Seizures: Natural Treatment with Cows Ghee: Versatility in Epilepsy and Neurological Disorders

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ABSTRACT

Epilepsy (Apasmara) is a common neuropsychiatric disorder with major public health problems worldwide. Convulsive activities lead to neuronal cell loss. Present antiepileptic drugs control epilepsy but long-term use generates adverse effects at the cognitive level, and behavior a land affective disorders. An integrated approach is needed to concentrate on the burden of epilepsy care, prevention, and rehabilitation. Ayurveda has both palliative and curative protocols which recalibrate the body from the pathological to the physiological state. Cow ghee is widely used in treating epilepsy and other neurological disorders. Cow Ghee is an ideal base for preparing Ayurvedic medicines because its ability to reach within the deepest of tissues in the human body makes it an excellent base to prepare Ayurvedic formulations targeting specific parts/organs/tissues of the body. Many other uses of Cow ghee within Ayurvedic science make it an invaluable part of this ancient medical science. Cow Ghee is used in Ayurveda for numerous medical applications, including treating allergies, skin and respiratory diseases. Cow Ghee is also known to retard the undesirable effects of drugs besides canceling the effect of toxins in the body. Epilepsy is a serious disorder of the CNS that affects both children&adults. The medium chain fatty acids in pure ghee get converted into ketones and supply the epilepsy patient brain with the energy it needs to survive. If given on a continual basis, they will support processes in the brain that are involved in healing and repair. Putting few drops of warm pure ghee in both nostrils regularly reduces epilepsy. Ghee is very essential to maintain the lipid membrane of cells, especially the brain tissues, the lack of which results in diseases with memory loss like Parkinson's and Alzheimer's. The absence of brain cell integrity even causes several mania, depression, and seizures -all of which have an increased prevalence in the present era.

Keywords: Cow Ghee, Epilepsy, Medicine, Ayurveda, Seizures.

How to cite this article: Sinha R, Sharma V. Epilepsy Seizures: Natural Treatment with Cows Ghee: Versatility in Epilepsy and Neurological Disorders. Int. J. Pharm. Edu. Res. 2022;4(2):5-8.

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Source of support: Nil

Conflict of interest: None

INTRODUCTION

Epilepsy

Epilepsy is not a disease but a syndrome of different cerebral disorders of central nervous system and is characterized by paroxysmal, excessive, and hyper synchronous discharges of large number of neurons.[1] Epilepsy is a common neurological condition affecting 60 million people worldwide, according to epidemiological studies. In India, the prevalence rate of epilepsy varies from 1,710 to 9,780 cases per million populations (Gupta and Malhotra, 2000). Nearly 957 of clinically approved drugs for epilepsy treatment were approved before 1985 and they can provide satisfactory seizure control for 60–70% of patients. These drugs, however, also causes notable adverse side effects such as drowsiness, ataxia, gastrointestinal disturbance, hepato-toxicity and megaloblastic anemia, and even life-threatening conditions. These facts make the field of ayurvedic anticonvulsant drug discovery a high priority.[2]

Types of Epileptic Seizures

Seizuresareclassified in two main categories:
1. **Partial seizures** involve a part of the brain. They can be:

- **Simple partial seizures.** Symptoms may include involuntary twitching of the muscles or arms and legs; changes in vision; vertigo; and having unusual tastes or smells. The person does not lose consciousness.
- **Complex partial seizures.** Symptoms may be like partial seizures, but the person loses awareness for a time. The person may do things over and over, like walking in a circle, rubbing their hands together, or staring into space.

2. **Generalized seizures** involve much more or all of the brain. They can be:

- **Absence of seizures (petit mal).** Symptoms may include staring and brief loss of consciousness.
- **Myoclonic seizures.** Symptoms may include jerking or twitching of the limbs on both sides of the body.

- **Tonic-clonic seizures (grand mal).** Symptoms may include loss of consciousness, shaking or jerking of the body, and loss of bladder control. The person may experience an aura or an unusual feeling before the seizure starts. These seizures can last from 5 to 20 minutes.[3]

Causes of Epilepsy

According to Ayurveda, the causes of epilepsy could be kama (passion), krodha (anger), lobha (greed), moha (temptation), harsha (ectasy), soka (grief) chinta (worry), udvega (anxiety), etc. Today, we can largely group the causes as:

- Hereditary influences
- Serious shock or injury to brain or nervous system
- Diseases like meningitis and typhoid
- Allergic reaction to certain food substances
- Circulatory disorders like a stroke or a heart attack
- Fevers
- Drug abuse or overuse: Chronic alcoholism, Lead poisoning, Use of hallucinogens and stimulants like cocaine, Antidepressants or sleep aids like benzodiazepines and barbiturates
- Mental conflict: Long term grief, passion or anger, Subconscious fear or hatred
- Deficient mineral assimilation like inadequate hemoglobin or essential minerals like magnesium
- Consumption of junk/processed foods and absence of a regularized lifestyle habit for those with epileptic tendencies[4]

Symptoms of Epilepsy

Presymptomatic Phase

- Involuntary twitching of eyebrows and rapid deviating movements of the eyes
- Drooling
- Rigidity of the muscles
- Fatigue
- Feeling of spasms or congestion in the heart
- Disinterest in food
- Hallucination or hearing sounds or voices
- Body ache

Symptomatic Phase

- In case of petit mal, there is a momentary loss of consciousness with no convulsions except a slight rigidity. In this case, the attack stops within a few seconds.
- Grand mal, on the other hand, has a more pronounced effect. Violent convulsions accompanied by a sudden loss of consciousness, twitching of the muscles, biting of the tongue, distorted fixation of limbs, rotation of the head and deviation of the eyes continue for much longer.
- Mild or vigorous shaking of arms and legs
- Head retraction to one side
- Constriction of fingers
- Accidental urination
- Making sounds like whimpering or crying
- Vomiting which could be frothing around the mouth or emesis of stomach contents[5]

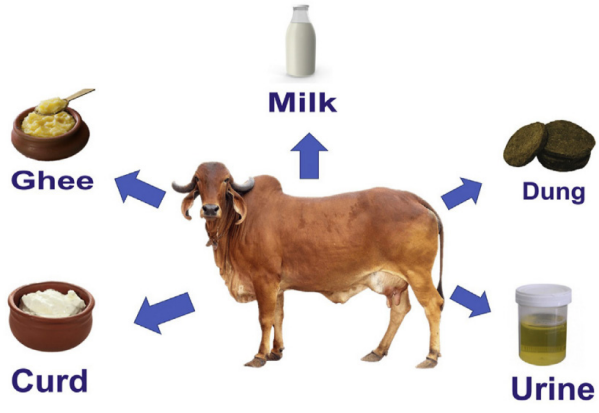

Figure 1: Different Products and dairy products of cow

Cow Ghee

Traditional reports and literature reveal that cow products have been used in various formulations of traditional medicinal systems. Many times, cow products and dairy products also has been used as solvent in various formulations.

Ghee also known as clarified butter, is an ancient dairy product prepared by heating milk, cream or butter over 100°C to evaporate water and precipitate the nonfat solids. Ghee is widely produced and consumed in India, Sudan, Ethiopia and the Middle East; in the last decade, the American continent, with USA, Argentina and Paraguay, as the main producers, has increased the production of cow ghee between 3000 and 12000 tons per year. In the same way, Western countries have displayed increasing ghee intake as a result of the globalization process as well as the replacement of the consumption of margarine due to the high content of industrial trans fatty acids (iTFA). According to the current scientific evidence, iTFA has exhibited a higher negative impact on cardiovascular disease, diabetes and even depression than saturated fatty acids reported that one gram of iTFA has 15-fold higher risk of coronary disease than one gram of saturated fatty acids. According to literature, ghee is a lipophilic product with 99–99.5% lipids from which 46–47.8% is saturated fat, 36% monounsaturated and 18% polyunsaturated. Ghee is also considered a good source of lipophilic vitamins (Figure 1 and Table 1).[5]

Cow Ghee as Food and Medicine

Cow Ghee is a semi-liquid form of butter without water content, lactose and other milk solids. It is prepared by gently heating butter until it becomes a clear golden liquid. Cow Ghee is light, pure and does not become rancid for a long time.[6] Cow Ghee is sweet in taste, cold in nature, and sweet after taste. It is considered soothing, soft, and oily.

Cow Ghee is known to be digested 96%, which is the highest as compared to all other vegetable or animal source fats. It contains antioxidants like Vitamin E and beta carotene (600IU), besides other nutrients like phospholipids, diglycerides and triglycerides. Cow Ghee is regularly used in formulations in Ayurveda, especially for chronic and degenerative ailments. It is either used as a part of a formulation as a nourishing, extracting, assimilating and/or absorbing agent. Cow Ghee, an integral part of the Ayurvedic health science, is considered a premier Rasayana. A food that helps maintains good health, vitality and longevity. Cow Ghee is excellent for balancing Vata (air) and Pitta (fire) related doshas (humor).[7] It is satvic (healthy) food, which has a pure influence on mind, body and spirit. Vata type people can enjoy more ghee than Pitta (fire) type who in turn can enjoy more Ghee than Kapha (Water) types.

Seasoning with ghee locks the moisture of food consumed, helps in proper and full digestion, ensures the maximum nutrient uptake to every cell of the body. Human cell membrane is made of lipoproteins and all lipid soluble particles will be easily absorbed into the cell. Ghee soluble substances have the ability to pass the blood-brain barriers and placental barrier. So target site can be reached soon, effective and even distribution to the whole body is ensured. Ghee is very essential to maintain the lipid membrane of cells especially the brain tissues, the lack of which results in diseases with memory loss like Parkinson's, and Alzheimer's. Absence of brain cell integrity even causes several mania, depression and seizures -all of which have an increased prevalence in the present era.

Cow Ghee Associated With Epilepsy/Brain Disorder

The cow ghee which has been kept for 10 years is called as "PURANA GHRITA". It is widely used in treating epilepsy and other neurological disorders,it help maintain DOSHAS and stimulates the regeneration of cells, simultaneously protecting the body from disease. Ingested through the nostrils, cow ghee stimulates the brain and reduces hair loss. It is widely used in treating epilepsy and other neurological disorders. Cow Ghee is also known to retard the undesirable effects of drugs besides canceling the effect of toxins in the body.[8]

Table 1: Comparative composition of cows and buffalo ghee

Component/Characteristic	*Buffalo ghee*	*Cow ghee*
Moisture (%)	0.3 ± 0.016 a	0.3 ± 0.022 a
Lipid (%)	98.9 ± 0.50 a	98.8 ± 0.80 a
Protein (%)	0.78 ± 0.026 a	0.81 ± 0.045 a
Ash (%)	0.03 ± 0.002 b	0.09 ± 0.028 a
Energy (kcal/kg)	9305 ± 230.5 a	9483 ± 44.5 a
Acid value (mg NaOH/g)	0.03 ± 0.01 b	0.21 ± 0.02 a
Free fatty acids (%)	0.01 ± 0.005 b	0.1 ± 0.01 a
Saponification value (mg KOH/g)	233.9 ± 38.5 a	217 ± 9.2 a
Iodine value (g iodine/100 g)	22.6 ± 1.58 b	50.6 ± 1.59 a

Sometimes a water based drug will not be able to diffuse properly in the cerebrospinal fluid (CSF) or other body parts. Cow ghee as a solvent, an Ayurvedic formulation, would reach the targeted areas with more efficiently. Cow Ghee based medicines are digested and absorbed more easily. The antioxidant properties of ghee help prevent damage of nervous and brain tissues besides retarding the progress of degenerative diseases.

Consumption of 1–2 teaspoon of cow's ghee every morning on an empty stomach will prevent the thickening of arteries, improve blood circulation, and reduce the accumulation of free radicals in body cells.

According to oldest ancient texts on medicine, *Nasya hi shirshodwaram* means nose is the best route for the administration of drugs for diseases related to brain and head. There are some disorders that may require a constant concentration of medicine for curative and prophylactic measure. For medication and direct delivery of drugs to the brain, drugs need to pass blood-brain barrier. Another prerequisite for brain delivery is the nano-form or vapor form of drug that can be easily taken up through the mucous membrane.[9] These days the formulations are being designed in such a way that drug delivery is targeted and desired concentration of the drug is delivered at a target site where required drug concentration is needed.

Hawan seems to be designed by ancient scholars to fight with diseases of the brain. Our metadata analysis demonstrates that the components of Hawan have a number of volatile oils that are specifically useful for epilepsy through one or the other mechanism of action. Due to high fire temperatures, the vapors of these oils enter the central nervous system through the nasal route. The routine of performing Hawan might keep the threshold value of the therapeutic components in the body and help in preventing epilepsy.[10]

One of the main ingredients used in hawan is cow "ghee" or "clarified butter" which has enormous beneficial properties.[11] This ghee, when burnt like oil will produce natural fumes that heal the respiratory system and clear any blood clots and bacteria affecting the nasal, lungs and veins. In the bible, the Book of Samuels, Chapter 2, "the

burning of sins, using the sticks and "clarified butter" infers that ghee was frequently used for fire rituals in biblical times.[12] Essential oil constituents that penetrate the nasal passages, skin or lungs have direct actions on the autonomic nervous system that can be grouped as relaxing or stimulating in terms of basic responses such as heart rate, blood pressure and respiration, in addition to localized dermal and bronchial effects. The medium chain fatty acids in *pure ghee* get converted into ketones and supply the epilepsy patient brain with the energy it needs to survive and if given on a continual basis will support processes in the brain that are involved in healing and repair.[13,14]

The components of Hawan seem to have multiple action in preventing epilepsy through scavenging free radicals, increasing the level of antioxidants, decreasing the level of nitric oxide and other underlying mechanisms.[15]

Nitric Oxide is an important neurotransmitter and also related to synaptic plasticity, neuronal excitability regulation, and epileptic activity. NMDA glutamate receptors activate calcium release via NMDA receptor, which activates the calcium calmodulin pathway to increase neuronal nitric oxide synthase protein expression and NO increment in different brain areas.[16] The higher NO level is able to increase the induction of generalized epilepsy. NO is known as a molecule that can easily react with O_2^- radicals in the brain and reduce oxidative stress-induced damage via deleting free radicals.[17] The antioxidant properties of ghee help prevent damage of nervous and brain tissues besides retarding the progress of degenerative diseases.

Mode of Action of Cows Ghee in Epileptic Seizures

A clinical trial with cow ghee showed that there was a significant increase in serum sodium and serum calcium levels and a decrease in serum potassium levels. Hence these drugs may bring about Shodhana to some extent and maintain the electrolyte balance, thus bringing about equilibrium and maintaining a high epileptic threshold Shodhana which includes Vamana, Virechana induces changes in the serum electrolyte levels.[18] It has been found in previous studies that Vamana and Virechana cause these changes in serum electrolyte levels though it is insignificant. Virechana caused an increase in serum sodium and serum calcium levels and a decrease in serum potassium levels. Therefore ketosis combined with change in serum electrolytes may bring about a cumulative change. Hence the epileptic threshold is increased.[19]

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