

SCIENTIFIC EVALUATION OF APASMARAGHNA DHOOP (HERBAL FUMIGATION) IN THE MANAGEMENT OF SEIZURE DISORDER IN CHILDREN

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ABSTRACT

Seizures are the commonest paediatric neurological problem, by themselves or as manifestation of many underlying problems. The disease in which the recalling power (*Smaranshakti*) gets vitiated/affected that is called *Apasmar* (seizure disorder/ Epilepsy). Most of the clinical presentation of *Apasmar* resembles with Epilepsy/Seizure disorder. There are number of synthetic drugs available for treatment of Epilepsy/Seizure disorder; but having major disadvantage of their chronic side effects. There are many drug preparations are described in *Ayurvedic* literature by *Acharyas*; the *Dhoopan* (Fumigation by various medicinal plants) is one of these. *Dhoopan* is used to control of seizures or adverse effects of antiepileptic drugs (AEDs) as well as for the maintenance of general health. The fumigation (*Dhoopan*) should be done repeatedly. As the one-time fumigation, doesn't give the protection; the repeated fumigation should be done to avoid the repeated infections of the baby/patient. *Acharya Kashyap* has described 40 types of *dhoopas* in *Kalpasthan Dhoomkalpadhyay* for various diseases & various diseased conditions. Out of which to prevent / treat *Apasmar* (seizure disorder/ Epilepsy); *Kashyapa* has described the *Apasmaraghna Dhoop*. Management of Seizure disorder with AEDs along with *Dhoopan karma* as adjuvant seems to be more beneficial. Hence the therapeutic as well as the biochemical, patho-physical changes by *Apasmaraghna Dhoop* are highlighted in this manuscript.

Keywords: Seizure disorder, *Dhoopan*, *Apasmar*, Fumigation, Epilepsy.

INTRODUCTION

Seizures are the commonest paediatric neurological problem, by themselves or as manifestation of many underlying problems.

The disease in which the recalling power (*Smaranshakti*) get vitiated/affected that is called *Apasmar* (seizure disorder/ Epilepsy).¹

Most of the clinical presentation of *Apasmar* resembles with Epilepsy/Seizure disorder.² There are number of synthetic drugs available for treatment of Epilepsy/Seizure disorder; but having major disadvantage of their chronic side effects. There are many drug preparations are described in *Ayurvedic* literature by *Acharyas*; the *Dhoopan* (Fumigation by various medicinal plants) is one of these.² *Dhoopan* is used to control of seizures or adverse effects of antiepileptic drugs (AEDs) as well as for the maintenance of general health. The fumigation (*Dhoopan*) should be done repeatedly. As the one-time fumigation, doesn't give the protection; the repeated fumigation should be done to avoid the repeated infections of the baby/patient. *Acharya Kashyap* has described 40 types of *dhoopas* in *Kalpasthan Dhoomkalpadhyay* for various diseases & various diseased conditions. Out of which to prevent / treat *Apasmar* (seizure disorder/? Epilepsy); *Kashyapa* has described the *Apasmaraghna Dhoop*.² Management of Seizure disorder with AEDs along with *Dhoopan karma* as adjuvant seems to be more beneficial. Hence the therapeutic as well as the biochemical, patho-physical changes by *Apasmaraghna Dhoop* are highlighted with special reference to *Apasmar* (Epilepsy/Seizure disorder) management.

MATERIAL & METHODS:

Review of literature done regarding the pathophysiology, clinical features & management of the Seizure disorder/Epilepsy along with the *Nidanpanchak* (pathophysiology), *Samprapti* (pathology) & various management therapies of *Apasmar* (Epilepsy).

Seizures are the commonest paediatric neurological problem, by themselves or as

manifestation of many underlying problems. They may be easy to manage, but often present a diagnostic or therapeutic dilemma.

Seizure: a seizure is the clinical manifestation (i.e. signs & symptoms) of an abnormal excessive paroxysmal synchronous neuronal activity in the brain. This abnormal neuronal activity is conducted to the body and produces seizure. The types of seizures are depending on: area of the brain producing the discharge, type of discharge, age of the patient.⁴

Epilepsy is defined as a disorder of the brain characterised by an enduring predisposition to generate epileptic seizures and by the neurobiologic, cognitive, psychological and social consequences of this condition.⁴

Practically, epilepsy is a disease of the brain defined by any of the following:

1. At least two unprovoked seizures occurring more than 24 hours apart
2. One unprovoked seizure and a probability of further seizures similar to the general recurrence risk after two unprovoked seizures (approximately 75% or more)
3. At least two seizures in a setting of reflex epilepsy.

Pathophysiology: the pathophysiology of seizure is still not well understood. However, we do know that seizures are produced when there is an abnormality in the:

1. Neurotransmitter levels
2. Ion channels
3. Receptors

In many of the genetic epilepsies, there is abnormality of the ion channels or the receptors due to mutations, resulting in epilepsies. These abnormalities can result in hyperexcitability of neurons, which thus have a tendency to seizures.

The other epilepsies result from neuronal damage because of various insults like infections, trauma and vascular events.

Ketogenic diet: the diet induces ketosis by high fat and low carbohydrate diet. Ketosis has an anticonvulsant effect in certain types of epilepsies. As many of the *Ayurvedic* management plans described by many *Acharyas* includes the preparations of *Ghritas*; which indicates the high ketogenic diet (*Ghrit*) is used as vehicle for various antiseizure *Ayurvedic* formulations.

Vagal nerve stimulation: a device (the impulse generator) is implanted under the skin in the chest with a coil around the vagal nerve. It is activated in case of an impending seizure by passing magnet across it. The impulses generated stimulate the vagus nerve & control the seizure. Various anti-seizure *Ayurvedic* management plans include *Tikshna Nasya* (nasal stimulation), *Tadan chikitsa* which can be considered as vagal nerve stimulation.

Apasmar chikitsa: the disease in which the recalling power (*Smaranshakti*) gets vitiated/affected that is called *Apasmar* (seizure disorder/ Epilepsy). *Acharya Charaka & Madhav Nidan* has described various causes and clinical features of *Apasmar*.⁵ The management of *Apasmar* requires *Yukti vyapashraya chikitsa* (*Tikshna Nasya, Tikshna samshodhana & Upashaman*) along with *Daiv-vyapashraya chikitsa*.⁵ Out of which, the *Dhoopan karma* is *tikshna* stimulation & *Daiv-vyapashrayachikitsa*.

Most of the management plans of the *Apasmar* are in the form of *Ghritkalpana*. As the modern medicine research also prefers the high *ketone* diet to control the seizure disorder.

What is Dhoopan:

In ancient times seizure was considered as a sacred disease and a number of superstitions measures (*Daivvyapashraya chikitsa*) used to be taken to prevent/cure it. *Yajurveda* also advocates performing *Dhoopan karma* (fumigation) daily twice a day to attain mental peace along with purification of mind & environment.⁶

Acharya Kashyap has explained *Dhoopan karma* (Fumigation) in detail in *Kalpasthan Dhoomkalpadhyay*. The *dhoopas* are described for the growing children (*Balak*) to protect from various *Bhut-Pishacahs* (? various infections). The fumigation (*Dhoopan karma*) should be done by the *Dhatri* as per various diseases of the child. As per origin the types of *dhoopas* are *Sthavar & Jangam*. As per action / property it is divided in three types *Dhoop, Anudhoop & Pratihooop*.²

The fumigation (*Dhoopan*) should be done repeatedly. As the one-time fumigation, doesn't give the protection; the repeated fumigation should be done to avoid the repeated infections of the baby/patient. *Acharya Kashyap* has described 40 types of *dhoopas* for various diseases & various diseased conditions. Out of which to prevent / treat *Apasmar* (seizure disorder/Epilepsy); *Kashyapa* has described the *Apasmaraghna Dhoop*. It contents *Ghee, Nimbapatra* (leaves of *Azadiracta indica*), *Laksha* (dried secretions *Laccifer laccata/Sal tree*), *Sarjarasa* (*Shorea robusta*) and dried stool/dung of *Bhas & Owl*.

These *dravyas* should be collected with proper *shuchirbhutata* on *shubhakala* (*muhurta*) and prepared & preserved in pot. The powder of these *dravyas* should be used as early as possible. This might be because of *saviryataa-vadhi* of the *churna* (Potency period/ Expiry

period) is 2 months as per *Acharya Sharangdhar*.

Chemical composition of the ingredients of *ApasmaraghnaDhoop*:

1. **Nimbapatra:** Triterpenoids, limonoids, azadirachtin, azadiradione, nimbin, nimbolide, nimbidin, nimbinin, sitosterol, margosinolide, tocopherol, salannol, Sterols, margosine, volatile oils, astringent elements, gum, sugar, white secretion and traces of sulphur. Antibacterial activity of phytoconstituents of Nimba has antibacterial activity. Saponins also inhibited the growth of gram + ve and gram – ve microorganisms. Neem has therapeutics implication in the disease prevention and treatment; it is considered that *Azadiracta indica* shows therapeutic role due to the rich source of antioxidant and other active components. Neem plants parts shows antimicrobial role through inhibitory effect on microbial growth/ potentiality of cell wall breakdown. Azadiractin a complex tetranor triterpenoid limonoid present in seeds is the key constituent responsible for both anti feedant and toxic effects in insect. Results suggest that ethanol extract of Neem leaves shows in vitro antibacterial activity against both *staphylococcus aureus*.^{24,25}
2. **Sarjaras:** nor-triterpene, dammarenolic acid Asiatic acid, dipterocarpol, triterpenic acid, ursalic acid, tannic acid & phenolic content. Possess antibacterial, analgesic & wound healing effect, local application relieves painful swelling.^{21,22,23}
3. **Laksha:** Resin 70-80%, sugar, protein, soluble salts 2-4%, coloring material 1-4%.^{22,23}

Smoke produced at high temperatures is considered as a simple way of administering a drug, which exhibits rapid pharmacological activity when inhaled. The submitted vital elements & herbal medicine combination inhaled in *dhoopan* first reach the brain, followed by lungs and other subtle components of the body. Thus, *dhoopan* has direct biochemical healing effect on CNS tissue diseases & complexities.

Acharyas also described multiple drug formulae through nasal route particularly for CNS disorders. So, the present article is designed to highlight the scientific evidences that support possible prevention/cure of *Apasmar* (Seizure/epilepsy) through *dhoopan* (*Apasmaraghna dhoopa*).

DISCUSSION

Hypothesis behind action of *Dhoopan* (*Apasmaraghna Dhoopa*) on *Apasmar* (seizure/epilepsy):

Nose is the best route for administration of drugs for the diseases of brain & head (*Nasa hi shiraso dwaram*). There are some CNS disorders which require a constant concentration of medicine for curative and prophylactic measures. For direct delivery of medicine to brain it require to pass blood brain barrier, nano form, volatile/vapour form; which can easily taken up through mucus membrane of nose.

The olfactory neural pathway provides both intraneural (via axonal transport, a high time consuming process) and extra neural (via bulk flow transport, through peri-neural channels taking only few minutes) access to the brain.¹⁶ Also an odour enriched environment increases neurogenesis in adult mouse brain.¹⁷

Nasya involves intranasal delivery of dry herbal powder or medicated ghee/oils & is practical, non-invasive, rapid & simple method to deliver the therapeutic agents in to the CNS.¹⁸

The advantages of intranasal delivery of medicine (*Nasya*) are it bypasses BBB, directly targets the CNS and reduces systemic exposure with systemic side effects. The drug absorption greatly achieved by rich vasculature & high permeable structure mucosa of nose also minimizes the degradation problem of peptide drugs, significantly increases accessibility to blood capillaries and avoids destruction in the gastrointestinal tract, delay absorption in GI tract, hepatic bypass & gut wall bypass allowing high bioavailability.

The process of *dhoopan* magnifies the advantage of the desirable medicinal phytochemicals and other healthy nutritional substances. The medicinal herbs & ghee are vaporised in *dhoopan* and enter in human body in gaseous form through the nose, lung and the pores of the skin.

Most of the components of *dhoopan* are having volatile oils. These volatile oil vapours enter into the CNS through intranasal route. This help in preventive & curative effect on seizure disorder (*Apasmar*) by stimulating the biochemical changes in the CNS. *Dhoopan* fumes are not only used for disinfection of the air but also it can be environmentally oppressed for the physical, mental, intellectual & spiritual development based on nanotechnology of *dhoopan* (fumigation).¹⁹

Scientific evidences for effect of *Dhoopan* on seizure disorder (*Apasmar*):

The purpose of *dhoopan* is to destroy the *bhut-pishachas* (? infections), protect the

human body, increase the energy of the human body, make it healthy and progressive.

One of the main ingredients of the *dhoopan karma* is Cow's ghee (Clarified butter) which has enormous beneficial properties. The ghee when burnt with medicinal plants; produces natural fumes which heal the respiratory system, clear blood clots, bacterium affecting the nasal mucosa, lungs & veins.

Essential oil constituents that penetrate the nasal passage, skin or lungs have direct action on the autonomic nervous system that can be grouped as heart rate, blood pressure and respiration along with localized dermal & bronchial effects.⁸

The reduction in the level of Nitrous Oxide (NO) may helpful in reduction in the epileptic seizures; which is achieved by *Dhoopan*.

Apart from the significant physical & medical applications like cleansing of the environment, curing bodily ailments & augmenting vitality and physical potentials, *Dhoopan* is also found to be of immense use in treatment of psychosomatic disorders & *Balagrahas*, psychological and psychiatric problems. The sub-limited vital elements & herbal medicine inhaled in *Dhoopan*; first reach the brain & then to lungs and other parts, the gross as well as the subtle components of the body. Thus, it has direct healing effect on CNS diseases & complexities. The elevated level of antioxidants upon reaching the brain and the nerves eliminates major cause of CNS tensions.

The specific energy currents reduced by *Dhoopan* and *mantrashakti* have significant remedial effect on the disorders & diseases ranging from headache, migraine, intellectual deficiency, depression, seizure disorders.²⁰

CONCLUSION:

The *Dhoopan* designed by the ancient scholars is not only for communicable disorders but also for CNS disorders. As most of the contents of the *Dhoopandravyas*; are having volatile oils that volatilize with high temperature of *dhoopan*. Most of the components have been found to be having anticonvulsant activity through one or other mechanism. The components of *Dhoopan* seems to have multiple action in preventing *Apasmar* (Seizure disorder/ Epilepsy) through scavenging of free radicals, increase in antioxidants, decrease in nitric oxide and other underlying mechanisms. From the pharmacological potentials of the components it can be concluded that the routine of performing *Dhoopan* might keep the threshold value of the anti-seizure elements (antiepileptic) in the body & help in preventing *Apasmar* however concerted efforts are required to prove the hypothesis.

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