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www.jbsoweb.com

ISSN 2321 – 6328

## Review Article

### A REVIEW ON HAVAN: DRUG DELIVERY BEYOND SCIENCE

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Article Received on: 08/04/20 Accepted on: 28/04/20

DOI: 10.7897/2321-6328.082122

#### ABSTRACT

In India the fire ceremony known as Havan is a socio- cultural religious rite. In Vedas therapeutic use of Havan cannot be ignored only because of its absence of scientific proof. It's involvement in medicine had made it secular like Yoga. The Vedas had segmented human life in many phases called 'Samskaras', like Namakarana (name giving ceremony), Antehsti samskaras (death ceremony) etc. In almost every walk of life the fire ceremony is indispensable like entering a new house, inauguration of business or marriages. Fire is been worshiped in Vedas as an important god in sustaining the creation. Literarily the worshiping of this fire is known as Havan where cow ghee and other articles are poured into the sacrificial fire. It is believed that if the god of fire is pleased then he bestows health, wealth, peace and prosperity. Anyone performing this Havan with the prescribed format will achieve the desired result. The ascetics like rishis, munis perform Havan for their spiritual growth, the kings perform to rule the globe, the businessman for prosperity, the farmers for rain and flourishing crops, the doctors for mass healing and to cure the incurable diseases, a house holder for peace and happiness etc. Hence unless and until we admit that Havan is a technology we can never admire the scientific nature of the most ancient and orthodox ritual that still exists today in spite of so many invasion, exploitation and religious conversions and moreover it's healing aspects through its drug delivery capacity.

**Keywords:** Havan, Materialization of thoughts, cow dung, purification of environment, Srotas

#### INTRODUCTION

In Havan there is a vessel usually made of copper in a shape of an inverted pyramid. Otherwise a pit is dug on earth in shape of a square or polygon and smeared with cow dung. Here dried cow dung along with dry woods and herbs are taken to ignite the fire. Cow ghee is offered into the fire throughout the process by chanting mantras and pronouncing "Swaha". Some rice grains and other articles are also put into the fire as per prescription. A special class of Brahmins does it regularly during the sunrise and sunset time and hence got the surname of 'Agnihotri'.<sup>1</sup> There are numerous varieties of Havan done for different purposes with altering the type of vessel shape, woods used for fire, different articles for sacrifice, different types of ghee and oils. Different days, timings and directions also need to be set up as per the purpose of Havan. In Rig Veda the god of fire (Agni Deva) is described with his importance and in Yajur Veda description is given how and why to please him. Especially the Atharva Veda is attributed as the specialist in this field of Havan. The Tantrik texts propagate metaphysics in a practical manner and describes in detail the process and types of Havan in order to accomplish one's desire.

Among the five great elements of creation the space and air do not differ much, when air become perfectly still is called space and when there is a slightest motion in space is called air and likewise when the liquid form of water solidifies is called earth. The modern science recognizes only 3 states where a matter exists and calls it solid, liquid and gas. But fire element does not come under any of this state. Fire is the midpoint around which the entire creation revolves. It is the only agent of transformation. Without fire there will be no metabolism and no evolution are

possible. The core of our earth is that fire which sustained life even in the ice age. As the sun is the center of the solar system likewise the Vedas hold that in the absence of sun, fire has the power of attorney.

In Havan the use of inverted pyramid shape vessels serves to generate and dissipate the energy to the cosmos via the environment. The conservation of energy states that matter cannot be destroyed in fire rather it got transformed into another state of energy. This is the reason why Atharva Veda declared that Havan is the 'Umbilicus' of the cosmos<sup>2</sup>. As the fetus is attached to the mother and the nourishment takes place via the umbilicus, likewise by the process of Havan, entire cosmos is interconnected and nourished. The purpose of Havan is to materialize a thought/vision in form of a prayer or mantra and for this, specific articles are sacrificed into the fire where the matters simply get disintegrate releasing energy. These various different energies from various articles thus released, get synthesize together forming an invisible zygote. Then the nature takes up the responsibility to give birth to materialize the same vision/thought called Sankalpa. There is a law of the mind that "Every demand is fulfilled". Havan is a scientific and logical method to fulfill wishes and desires. The misdirected thoughts' when arranged properly are called 'Prayers' or 'Mantras'. Hence Havan can be viewed as the alchemy of subtle energy stored in various objects of nature in presence of fire and well directed mental energy. In Mahabharat, King Drupada wanted a son who can kill Dronacharya. Dhristadyumna and Draupadi were born out of Havan fire and the two Rishis named Yaja and Upayaja were successful in creating an entity to kill Dronacharya<sup>3</sup> just like formation of antibody against antigen. The universe is known as cosmos and the human body is called micro cosmos. Havan is a

technology which integrates both of them for a definite result. By Havan an immediate effect is seen on the performer's physical, emotional and mental realm and a passive effect is always seen on the environment by purifying it. It is said that "By Havan we heal the environment and in return the environment heals the humanity". It has a multiplying effect; even 10 gm of medicated cow ghee generate tons of oxygen<sup>4</sup> and can heal many people in the surrounding. Here we are going to discuss some of the visible benefits of Havan technology.

### Concept of disease in Ayurved

Two or more atoms form a molecule but in reality, the atoms do not touch each other. There remains a permanent space in-between them. These then compose an element. These elements in biology forms the DNA, cells and organism like man. The interstitial intercellular and intermolecular space remain as it is. This space may be micro, or macro is called as "Srotas" (channels) in Ayurved. These so called Srotas are channels or pathways for the transportation of nutrients all over the body. The vital life force including motion, heat, mass, nerve impulse, endocrine secretion and above all mind utilizes these channels to maintain body's physiology and psychology. Whenever any of the channels get blocked by any means, and then know that onset of a disease has begun. The disease may be a minor case of headache or fatal like cancer, no diseases can origin without a blockage in the Srotas or channels. Hence there is a definition of the body in Ayurved i.e "this body is an aggregation of Srotas/channels". The cause of every disease is "Kha Baigunya"<sup>5</sup> means only due to blockages in the normal physiology, physiology is converted into pathology.

### Concept of treatment in Ayurved

There are two types of treatment in Ayurved: Shamana and Shodhana<sup>6</sup>

1. Shamana Chikitsa – means pacifying/neutralizing the accumulated Vata, Pitta and Kapha within body.
2. Shodhana Chikitsa – means to drive out the accumulated Tridosha from the body.

In the second type of treatment the knowledge of Srotas/Channels comes into play. Pancha Karma therapy is advised for it. Before Pancha Karma there are two preparatory procedure done on the patient without fail known as Snehana (oleation) and Swedana (sudation).

In Snehana a required amount of medicated cow ghee is given to the patient to drink every day for 3 or 5 or 7 days till the fecal matter is saturated with ghee. The property of cow ghee is that it gets into all the channels of the body like a cotton piece soak ghee and lubricate all the channels. It has the capacity to cross even the blood brain barrier and reach the DNA of every cell. Then by application of the second procedure of sudation the blockages in any channels get fries up and get detached from the walls of the channels. For example, the cholesterol as blockage get detach from the arterial wall. Once the impurities get detached, they come back to the GI Tract known as the Maha-Srotas in Ayurved i.e. the Great Channel. Then by applying Pancha Karma therapy those impurities are thrown out of the body by purgation, vomiting, nasal smoking, blood draining etc.

### Role of Havan

During the process of Havan the cow ghee when poured into the sacrificial fire get vaporized in high temperature. The role of fire is to provide heat as in sudation and due to heat every skin pore

get dilated and the highly volatile ghee vapors rush into the body through all possible openings. As a result, both Snehana and Swedana procedures are accomplished simultaneously. The ancient Rishis and Munis performed this Havan every day, as a result no toxins ever accumulated within their body to block any channels. Therefore, they live a long and disease-free life. This Havan comes under the Daivi Chikitsa and Satwavajaya Chikitsa of Ayurved.<sup>7</sup> Daivi Chikitsa is done by manipulating the belief system of the patient and Satwavajaya Chikitsa is done by controlling the mind of the patient. From the very beginning Ayurved always stood still on the tripod stand of Yukti, Daivi and Satwavajaya Chikitsa but today only Yukti Chikitsa is available and yet popular. Imagine the status of Ayurved when rest two stands will again come into play.

### Ancient therapeutic references on Havan

In Sushrut Samhita Maharishi Sushruta admitted Ayurved to be the upanga (Limb) of Atharva Veda. Maharishi Charaka also accept Havan to be a part and parcel of Ayurvedic treatment<sup>8</sup>. Havan principles incorporated in Yukti Chikitsa as dhoomapana (medicated smoke inhaling through nostrils and exhaling through mouth). Ayurvedic texts like Bhaisajya Ratnamali and Yog Ratnakar, this dhoomapana is prescribed in fever, mania, epilepsy, worm infection, syphilis, insect bite, animal bite and even in pregnancy. The pharmacokinetic modeling and evaluation of Havan showed that pulmonary inhalation of medicated fumes significantly imparted higher bio availability of phyto medicines in blood and provide higher lung deposits of the same as compared to oral and intravenous administration of modern drugs. "Nostrils are doors to the brain", this is a well-known principle in Ayurved and Havan fumes are quicker to reach the higher brain centers and act on CNS.

In Atharva Veda there are descriptions where Havan is used to get long and healthy life along with curing of many specific diseases. There are description to get rid of Tuberculosis, both suppressed and expressed condition of Tuberculosis is said to be healed by Havan smoke inhalation. The Havan fumes are capable to destroy worms in most hidden places in the body including their eggs. There is Havan to prevent diseases and invoke long life. Different Havan are described for pregnancy related problem, Goitre and mania. In Rig Veda also many references are found to cure fever, to attain long life, to treat pregnancy related disease. For detail refer "Yagya Therapy in Vedic and Ayurvedic Literature: A Preliminary exploration"<sup>9</sup>.

In Chandogya Upanishad it is mentioned that the performer of Havan should be a knower of health science too<sup>10</sup>. Havan is done using herbs only during the transition of seasons to remove epidemic diseases and get health benefits to the entire society. From the above references it can easily be inferred that the Vedas advice Havan to be the only therapy for all the physiological, psychological, emotional and spiritual ailments.

### Chemical processes during Havan

The temperature attained by the vessel/pit during Havan varies between 250°C to 600°C while in the actual flame it can raise upto 1200°C to 1300°C<sup>11</sup>. At this point the volatile constituents of the Havan materials get vaporized and their gaseous fumes get dispersed in the atmosphere. The cellulose and carbohydrates undergo combustion to form steam and again by combining with hydrogen and oxygen get dissociated forming Thymol, Pinene, and Eugenol etc. Thymol have positive effects like antioxidants, anti-inflammatory, local anesthesia, antiseptic, antibacterial and anti-fungal properties. It also has beneficial effect on the cardiovascular system. This Thyme provides a natural defense

against cold, flu, soothing in cough as it aids in dilation of blood vessels. It also has strong bactericide effect on Gram positive and Gram negative bacteria's<sup>11</sup> it also acts as a bronco spasmolytic agent<sup>12</sup> This Thyme<sup>13</sup> is nothing but Ajwain in India which is used as spices in our home. When this is offered as sacrifice in Havan the above result is achieved.

Pinene accelerates the feelings of alertness and focus, enhances short term memory retention, and increases creative inspiration by its cerebral stimulating properties<sup>14</sup>. Pinene is also known to counteract some of the adverse effects of THC (Tetra Hydro Cannabinol) like paranoia. Pinene shows great promise as a bronchodilator, aiding in respiratory issues such as asthma. A study in 2011 suggests pinene has potential for acting as an antiviral agent. It also contributes to the advanced anti-inflammatory properties those cannabis yields. This is found in plants like rosemary, cannabis, eucalyptus, sage leaves etc. Clove oil contains a chemical called eugenol, which acts as an anesthetic and antibacterial agent. Clove oil is anti-inflammatory and antifungal. It is a colorless to pale yellow, aromatic oily liquid extracted from certain essential oils especially from clove oil, nutmeg, cinnamon, basil and bay leaf. It is present in concentrations of 80–90% in clove bud oil and at 82–88% in clove leaf oil. Eugenol has a pleasant, spicy, clove-like scent<sup>15</sup>. Eugenols act as an anesthetic drug and antibacterial agent. It is also anti-fungal and anti-inflammatory in nature, it has also anti insecticide and anti-oxidant property. It is used traditionally as a savior agent and anti-microbial in foods.

A scientist named Trello of France published his research on Havan where he discovered that Havan is done mainly using mango woods due to its plenty availability in India. When mango wood is burnt a gas called formaldehyde is produced which kills dangerous bacteria of the atmosphere. It is only after his research that scientists found this gas and how to make formalin. This gas is formed even by burning jaggery. Formalin is thus produced from the gas Formaldehyde in the presence of water<sup>16</sup>. That is the reason why little water is sprinkled all over the place where Havan is performed. The ancient Rishis knew the art of purification of atmosphere and soil much before we came to know about it. During Havan even formic acid and acetic acids are produced. The chemical reaction shows that when carbon dioxide reacts with water molecules at 1200<sup>0</sup> C, they produce alcohol. So to a large extent carbon dioxide is converted into oxygen in Havan. New researches have shown that even if 10 gm of cow ghee is burnt in Havan produces tons of oxygen<sup>17</sup>.

### Cow dung used in Havan

The cow dung is considered very sacred by our ancestors, Rishis, Munis, priests etc. Traditionally it is been used to coat our kitchen and outer house and it is found even today in our villages. In every Hindu Puja one of the most important items is the cow dung. The percentage of oxygen in our atmosphere is 21% and no place on earth we can find oxygen exceeding 21%. Only fresh cow dung has got 23% of oxygen and when it gets dried up completely the oxygen concentration rise up to 46% - 56%<sup>18</sup>. This is the reason why dried cow dung is used as burning material along with various woods in Havan. Some of us may not know that the Agarbatis or Dhoop that we use in our daily worship at home or temples are made up of dried cow dung. When the end product ash is collected and analyzed, it was found that it contains all 92 elements necessary for life<sup>19</sup>.

As per Vriksha Ayurved it is found that the ash derived after Havan is alkaline in nature which is rich in organic carbon, sulfur, phosphorus, potassium, magnesium, manganese, iron, calcium,

copper, zinc etc. these are some of the micro and macro nutrients beneficial for crops when used as manure. These agro chemicals increases plant growth in terms of shoot and root length together with crop production. The plants and crops which are grown in this Havan environment were able to withstand drought more efficiently and causes modifications in cellular structure of plants and translocation of more nutrients to the fruits is seen rather than leaves. By Havan technology pests and diseases were successfully managed. Tejasvi Naik and Asha Naik, the receiver of prestigious Aspee L.M Patel farmer of the year award 2010 stated that the environment created by Havan, filled the atmosphere with positive energy also<sup>20</sup>. In this way we can proceed towards organic farming without compromising the yield or polluting the soil and environment. Besides India this potential of Havan technology is being utilized in countries like Germany and Poland (Limaye 2013).

### Some researches on Havan

1. Dr. (Mrs) Mamta Saxena conducted an indoor experiment on Havan in collaboration with Central Pollution Board of Delhi found that Yagya is effective in the reduction of air pollution both gaseous and microbial and also removes the bad odor, if any, at the place. It is also capable of containing harmful polluting gases in the atmosphere<sup>21</sup>.
2. Anna Ralles, a scientist found that pathogenic staphylococcus bacteria do not survive in Havan environment<sup>22</sup>.
3. Dr. Ulrich Berk, a scientist and president of German Association of Homa Therapy received some radioactive rice from the Fukushima region for some tests. They measured the level of radioactivity, then put the rice in the ash water of Havan and measured again in a daily basis. After 3 days radioactivity began to decrease and after 10 days only the background radioactivity was left<sup>23</sup>.
4. Shailendra Sharma with Dr. Ulrich Berk found that when the Havan ash is added to pollute water, it gets purified<sup>24</sup>.
5. Following the Chernobyl nuclear disaster of Ukrain in 1986, authorities throughout the region listed food products for residual radioactivity. They tested for milk products from small farms in Europe and a surprising pattern emerged. The farms which used an ancient Vedic farming practice called Havan had no radioactive products at all.
6. According to Dan Winter, electrical scientist, inventor and spiritual adept said that Havan creates a fractal electrical field that is self-organizing, concentrating charge, through nondestructive compression. This charge field cancels the destructive charge field of nuclear fission.
7. Sarad Bissa of Jai Narain Vyas University, Jodhpur stated that medicinal benefits of Havan include reduction in allergy and mental stress, renewal of brain cells and positive effects on circulatory system and nervous system. It harmonizes the functioning of Prana and neutralizes harmful radiation<sup>25</sup>.
8. The Hindu- PTI, New Delhi on June 14<sup>th</sup>, 2011 published an article "Ancient fire ritual has positive impact on environment: Scientists". In a remote village in Kerala there was a 4000 years old fire ritual called Atirathram conducted even today every year and the U.S. based Indologist Frits Stall documented the tests in 1908 and 1956. The Atirathram place revealed that the bricks continue to be free of microbial presence; hence the effect of Havan is long lasting.
9. A report of a research paper was published in Research Journal of Ethno pharmacology 2007 December, it said that the effect of one-time Havan smoke remained for one month and the virus level in the room's air was much less even after 30 days.
10. Tautik a scientist found in his research on Havan said that if half an hour the body comes in contact with Havan smoke,

then even microbes of dangerous diseases such as typhoid die and the body becomes purified.

11. Professor Tilward says that fumes of Havan kill bacteria and microbes of T.B, measles, cowpox, smallpox.
12. Acrobiologia – A Journal published in Netherland in June 2007 reported that Havan has been found an effective method to reduce fungal load in a small office room. As per the experiment conducted the Havan smoke has the potency to kill fungi like *Aspergillum*, *Penicillium*, *Curvoloria* and *Cladosporium*.
13. Dr. Hafkin said that inhaling the fumes of Havan from distance induces secretions from certain glands related to windpipe that fills our minds and hearts with relaxation<sup>30</sup>.
14. Yajna's Scientific Interpretation – an article published in the proceedings of Aswamedha Yajna held in Montreal, Canada, 26-28 July 1996. The carbon dioxide produced in Havan is at a very slow pace and the smoke is rich with the aroma of all the material burnt in it. It acts as a stimulant to the Brain and the same carbon dioxide is used by the plants.
15. Scientists at the National Botanical Research Institute, Lucknow headed by Chandra Sekhar Nautiyal studied plant microbe interaction in Havan environment. The bacteria count reduced by 94% within 1 hour and the effect lingered for a month. This study was published in Journal of Ethno Pharmacology December 2007. Human pathogen that were eliminated were *C. urealyticum* which infects urinary tract, *K. rosea* is a catheter related infection, *S. lentus* produce abscess in spleen, *S. xylosus* produces inflammation in kidneys, *T. inchoensis* causes leukemia, *E. aerogenes* related to hospital infections, *S. spiritovarum* causes lungs infection. Plant related pathogens that were eliminated are *B. glumae* which rots grains and seedlings, *C. flunumfaciens* wilts beans, *X. campestris* produce black rots in mustard.
16. In the Hindustan Times publication of 7<sup>th</sup> May 1999, a news article by Rahul Karmakar of Lucknow established that the Vedic Yajna actually destroys the harmful gases of sulfur dioxide and nitrous oxide present in the air and also kills germs present in water<sup>26-29</sup>.

## DISCUSSION

Nano Technology has taken 1 to 100 nm as its scale where 1 nm is 10<sup>-9</sup> of a meter. A typical carbon – carbon bond length or the spacing between these atoms are in a range of 0.12 to 0.15 nm and elementarily the lower limit is set by the size of hydrogen atom to be a quarter of a Nano meter. On the other hand, the smallest cellular life forms, the bacteria of the genus Mycoplasma are around 200 nm in length and the DNA double helix has a diameter around 2 nm<sup>30</sup>. The above facts clearly suggest that by the Havan Technology various herbs and minerals within it are converted into the size below the grasp of Nano scale and achieve the pattern of electromagnetic wave and get well directed by the chanting of Vedic mantras. This easily invades into the pathogens and destroys them both in the animal and plant kingdom, thereby purifying air, water and land. The Vedic mantras acts like the steering wheel which allows the Havan energy to pro long life or cure of disease or materialize thoughts and prayers.

## CONCLUSION

By the help of mantras, the Havan effect can be magnified and transferred around the globe because we all inhale the same air pervading everywhere. Many more researches were being conducted throughout the globe but only reading and writing will not serve the purpose. Unless and until Havan is adopted by us all as a purification measure the polluted environment will keep on decreasing the human life span of 100 years as per the Vedas.

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**Cite this article as:**

Pradeepta Kumar Singh and Nibedita Mohanta. A Review on Havan: Drug delivery beyond science. *J Biol Sci Opin* 2020; 8(2):21-25.

<http://dx.doi.org/10.7897/2321-6328.082122>

Source of support: Nil; Conflict of interest: None Declared

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