

HAWANA AS A TOOL FOR SAVIOR OF MANKIND: A REVIEW**Mukesh Rani^{1*}, Madhavi Goswami², Pooja Rani³ and Nishat Afzal⁴**

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ABSTRACT

Air pollution occurs when harmful or excessive quantities of poisonous substance including gases, particles, and biological molecules are introduced into atmosphere. Air pollution results in adverse effect on health either short term decrease in lung's function, respiratory symptoms, asthma attacks, COPD, or death due to respiratory distress. In air micro-organism are present in both indoor and outdoor environment. Some of these micro-organisms may be pathogenic and cause disease such as tuberculosis, tetanus, cholera, flu etc. In ancient period, seers used to recommend *Hawana* for purification of air and destruction of disease causing agents (such as germs of T.B., measles, smallpox, cow-pox and bacteria, fungi etc.). *Hawana*, an Indian ritual

with positive scientific basis uses special herbs (*Hawana Samagri*) to be offered in the fire of medicinal wood for killing the harmful bacteria, microbes etc. and purification of air. An attempt was made to study and evaluate the environmental impacts during performance of *Hawana*.

KEYWORDS: Air pollution, *Hawana*, *Hawana Samagri*, Respiratory Disease.

INTRODUCTION

At present time urbanization has become a worldwide trend in which a large number of people are migrating to renowned cities which results in overcrowding it. The consistent migration from rural to more fast-paced urbanized areas has become one of the most important reasons for cutting of more trees for human shelter which resulting in air pollution. As population increases in cities there is also increase in traffic and industries which also ends in production of poisonous gases (carbon monoxide, nitrogen oxide, carbon dioxide, hydrocarbons, and sulphur oxides) further accentuating air pollution. Polluted air is known to contain excessive quantities of substance including gases, particles (originated from volcanoes, dust storms, and forest and grassland fires, burning of fossil fuels in vehicles) and biological molecules.^[1] There are also new species of bacteria and virus coming up which manifest new disease and are resistant to old drugs. Air pollution results in adverse acute respiratory effects in population of all ages.^[2] An estimated 4.2 million premature deaths globally are linked to air pollution, mainly from heart disease, stroke, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections in children difficulty in breathing, wheezing, coughing. Worldwide air pollution accounts for 29% of all death and disease from lung cancer, 17% from acute lower respiratory infection, 24% from stroke, 25% from ischemic heart disease, and 43% from chronic obstructive pulmonary disease.^[3]

Details of adverse Effects of Basic Air Pollutants on health is given in table 1.^[4]

In an endeavour to find out some solution which is effective and long lasting for this environmental problem, the *Vedic* science of *Hawana* may be preferred for this dilemma as mentioned in the ancient books.

MATERIL AND METHODS

Detail description of *Hawana* was collected from different classic books and previous research articles from internet. Detail of air pollution was collected from different modern classic books.

The concept of *Hawana* in *Ayurveda*

Ayurveda always approach promotive and preventive measures, which takes into consideration the whole body, mind and spirit while dealing with “*Swasthsaya Swasthya Rakshnama Atur vikaroprashamanam Cha*”.^[5] *Acharya Charka* has mentioned three types of *Chikitsa*- *Daivavyapashrya* (spiritual), *Yuktivyapashrya* (rational), and *Satvajya*

(psychological). The spiritual therapy consists of recitation of *Mantras*, wearing roots and gems, auspicious acts, offerings, oblations, following religious precepts, atonement, fasting, invoking, blessings, falling on the feet of the gods, pilgrimage etc.^[6] *Hawana* is a scientific experiment in which special medicinal herbal/plant preparations; termed as *Hawana Samagri* (Ingredient) are offered in the fire of medicinal woods, ignited in a specially designed inverted pyramid shaped fire pit or container called *Yagya Kunda*.^[7] *Yajurveda* advocates performing of *Hawana* every day, morning and evening to attain spiritual enlightenment, mental peace, purification of the mind and environment.^[8] From time immemorial, human beings have used smoke of medicinal plants for curing disorders. The ancient *Maharshis* used to perform *Agnihotra-Yagyas* to purify the environment as described in *Rigveda*-the most ancient compilation of knowledge on earth by sublimating the *Hawana Samagri* in the fire accompanied by the chanting of *Vedic Mantras* described in *Rigveda*.^[9] Hence, *Hawana* is a non- conventional approach to control air pollution.

Ingredient used in *Hawana*^[10]

There are mainly four types of contents present in *Hawana Samagri*; odoriferous substance, substance with healthy constituents, sweet substances and medicine herbs with woods.

- 1. Odoriferous substances:** These are saffron, musk, agar, tagar, chandan, illaychi, jayphal, javitri and camphor.
- 2. Substances with healthy constituents:** These are clarified butter (ghee), milk, fruits and cereals like wheat, rice, barley, til, kangu, munga, chana, arhar, masur or peas.
- 3. Sweet Substances:** These usually are sugar, dried grapes, honey or chhuhara. (E)
- 4. Medicinal Herbs:** These are used as per specific requirement. Some common herbs are Somalata or Giloya, Brahmi, Shankpushpi, Nagkesar, Mulhati, Red Chandan, Baheda, Guggul, Sonth and Harad.

These ingredients are burnt in the wood of Sandal-wood (*Santalum Album*), *Agar* and *Tagar* wood (*Aquilana Malaccensis* and *Valeriana Wallchii*), *Deodar* (*Cedrys Libani*), Mango (*Mangifera Indica*), *Dhak* or *Palash* (*Butea Frondosa*).

The observations of some distinguished scientists are given in table 2^[11, 12] and table 3^[13-20] which show effect of *Hawana* on poisonous gases and disease causing agent.

Table 1: Details of Adverse Effects of Basic Air Pollutants.

Pollutant	Health Effects
Carbon Monoxide	Poor reflexes, Ringing in the ears, Headache, Dizziness, Nausea, Breathing Difficulties, Drowsiness, Reduced work capacity, Comatose state (can lead to death)
Lead	Kidney Damage, Reproductive system damage, Nervous system damage which includes brain dysfunction and altered neurophysical behaviours
Oxides of Nitrogen (NOX)	Increased risk of viral infections, Lung irritation (including pulmonary fibrosis and emphysema), Higher respiratory illness rates, Airway resistance, Chest tightness and discomfort, Eye burning, Headache
Ozone (O3)	Respiratory system damage from free radicals, Reduces mental activity, Damage to cell lining (especially in nasal passage), Reduces effectiveness of the immune system, Headache, Eye irritation, Chest discomfort, Breathing difficulties, Chronic lung diseases including asthma and emphysema, Nausea
Sulphur dioxide (SO ₂)	Aggravates heart and lung diseases, Increases the risk for respiratory illness (including chronic bronchitis, asthma, pulmonary emphysema), Cancer.
Respirable Particulate Matter (PM ₁₀)	Respiratory illness including chronic bronchitis, increased asthma attacks, pulmonary emphysema, Aggravates heart disease.

Table 2: Effects of *Hawana* on Poisonous Gases.

Experiment	Gases on the Day of <i>Yagya</i>	Gases on the next day of <i>Yagya</i>
Central Pollution Control Board, Delhi on Mango wood	In <i>Hawana</i> on burning of mango wood there is almost near zero CO emission. ^[11]	-----
M.S. Apartments, K.G. Marg, New Delhi- in the open air in January 2004 and February 2005, respectively	NO ₂ - 47% reduction SO ₂ - 86% reduction	NO ₂ - 60% reduction SO ₂ - 47% reduction
Experiments conducted under Central Pollution Control Board, Delhi.- Study the effect of <i>Yagya</i> on the gaseous pollutants	NO ₂ reduced by 23% SO ₂ - 33% reduction	NO ₂ - 25% reduction SO ₂ - 41% reduction
Hindustan Times publication of 7May, 7 1999,Rahul Karmakar Lucknow ^[12]	Destroys the harmful gases of Sulphur dioxide and Nitrous oxide present in the air.	-----

Table 3: Effects of *Hawana* on disease causing agents.

Experiment	Effect on the day of <i>Yagya</i>
Dr. Hafkine ^[13] Burning of Mixture of ghee and sugar Sugar in <i>Hawan Samagri</i>	Kills the germs of certain diseases Kills the germs of T.B., measles, smallpox and cow-pox.
Trelle of France ^[14] On Burning of mango wood and Jaggery formic aldehyde	Destroys the harmful bacteria
Tautilk ^[15]	Destroyed germs of typhoid
National Botanical Research Institute ^[16]	Reduce air born bacteria to a large extents
Dr. Shirowich, a Russian scientist ^[17] Cow's Ghee is burn into fire Medicinal fumes emanating from <i>Agnihotra</i>	Its fumes lessen the effect of atomic radiation to a great extent These eradicate bacteria and other micro-organisms
Dr. Kundan lal M.D. in allopathic medicine ^[18] When 1kg of mango wood was burnt with <i>Hawan Samagri</i> in open air	Bacterial count was reduced by 94%.
Chander Shekhar Nautiyal head of the division studying plant microbes interaction. ^[19]	On the <i>Yagya</i> day-Bacteria count was lower infection like T.B. and other viral infection. First day after <i>Yagya</i> - Bacteria count was lower infection like T.B. and other viral infection.
Experiments conducted under Central Pollution Control Board, Delhi. ^[20]	On the <i>Yagya</i> day Reduction of Bacteria-79%, Fungi-68% TMF- 69% and Pathogens- 33 % First day after <i>Yagya</i> - Reduction Bacteria- 55%, Fungi-15% Pathogen- 79% Second day after <i>Yagya</i> - Reduction in Pathogens-79% Total micro flora had reduced -49% seventh day after <i>Yagya</i> - reduction of bacteria- 93%, fungi- 88% pathogen 93%

DISCUSSION

The ingredients used in *Hawana* are mainly medicinal plants wood, odoriferous substance, ghee or fatty substances and sweet substance like sugar and honey. All fatty substances used are combinations of fatty acids, which volatilise easily. when these volatilise substance like camphor with mango wood are burn at temperature (250-600) they diffuse in the environment and their fumes kill the flies, ringworm, fleas, dice etc. These volatile substances further subjected to photochemical reaction in sunlight and undergo through decomposition, oxidation, reduction etc.

To some extent even CO₂ is also reduced to formaldehyde as follows.



So there is release of O₂ which is said to be *Prana* for living.^[21]

Ghee when burnt in fire goes up in the atmosphere and the fat particles get laden on the dust particles in the atmosphere and come back to the earth in form of rain thus nourishes the vegetation on the mother earth. Ghee helps in rapid combustion of cellulose of wood and its fumes decrease the atomic radiation effects. The combustion of glycerol portion gives acetone bodies, pyruvic aldehyde and glyoxan etc. The hydrocarbons produced in the reactions again undergo slow combustion and as a result methyl or ethyl alcohols and formaldehyde are produced which are antibacterial, antifungal.^[22, 23] Formic acid and acetic acid are also produced on slow combustion of hydrocarbon; formic acid acts as antibacterial kill the *E.coli*^[24,25] and acetic acids act as antiseptic against streptococci, staphylococci, pseudomonas, enterococci etc.^[26,27,28]

When cellulose and other carbohydrates undergo combustion, steam is formed in copious quantities by the combination of hydrogen of organic substances with the oxygen. This is how the substances like thymol, eugenol, pinene, terpinol etc., are carried over in the surroundings and the aroma of a *Hawana* can be smelt even at a considerable distance.

Hence, it can be said that '*Hawana*' is probably one of the possible solutions for today's environmental pollution problems.

CONCLUSION

In *Hawana*, medicines and herbs are vaporized by offering them into the sacrificial fire, and they enter the human body in a gaseous form through the nose, lungs and the pores of the skin. *Hawana* is effective in the reduction of air pollution both gaseous and microbial and also removes the bad odour. It is also seen that the effect of *Hawana* remains in the atmosphere for days after it has actually been performed. It is important now for the whole world to recognize the scientific basis of Yagya or Hawan so that diseases which are produced due to pollution can be minimized.

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