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# Antimicrobial effect of *Vishaghna Gana Dhupana*

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## ABSTRACT

Environmental pollution is one of the major causes for death. Among all environmental pollution Indoor air pollution is leading avoidable cause of disease and death in hospital area. Indoor environment of hospital acts as a reservoir of pathogenic microorganisms. Microbial toxins that released into air promote infection and disease. Respiratory secretion from a patient with an infection of the respiratory tract contaminate surrounding surfaces and also become suspended in the air after coughing, sneezing, spitting and other respiratory acts, these are responsible for epidemic spread of many nosocomial infections to nursing people, doctors and other people who visit hospital. Fumigation is a procedure which is used for sterilization from ancient time. Formaldehyde has been used for Fumigation, but use of formaldehyde for long term will cause carcinogen. Safety and efficacy concern have highlighted the need for alternative methods. *Dhoopana* is one of the procedures which are said in classics for the purification of air and as preventive aspect. The concept of air pollution is clearly mentioned in *Ayurveda* under the concept of *Janapadodhwamsa* and *Visha Chikitsa*. *Susruta* in *Kalpasthanana* has explained about the *Dushita Vayu* (vitiated air), and treatment for *Vayushudhiprakara* (purification of air) through a process of *Dhoopana* (fumigation).

**Key words:** Anti-Microbial, *Dhoopana*, Sterilization, *Vishaghna Gana*

## INTRODUCTION

The well-being describes the relation between environment, occupational, spiritual etc. These different dimensions of health will interact together to determine the quality of life. *Ayurveda* affirms that health is the balanced and dynamic integration between environment, body, mind and spirit.<sup>[1]</sup> Slight disturbance in these factors leads to disease. Exposure to external environmental pollutants such as toxic gases, fumes, radiation is one area, but exposure in hospitals where virulent organisms are present is more

grievous. With every breathe people inhale various microbes enter into the body unknowingly. The air inhaled by people is abundantly populated with microorganisms which are also called bio-aerosols. "Bio-aerosol is a colloidal suspension, formed by liquid droplets and particles of solid matter in the air, whose components contain or have attached to them viruses, fungal spores and conidia, bacterial endospores, plant pollen and fragments of plant tissues. They account for 5–34 % of indoor air pollution".<sup>[2]</sup>

4.3 million People die every year prematurely from illness attributable to household air pollution. Deaths are caused due to pneumonia, stroke, ischaemic heart disease, COPD, lung cancer etc. Microbial toxins which are released in air promote infection and disease by directly damaging host tissues and by disabling the immune system. Respiratory secretion from a patient with an infection of the respiratory tract contaminate surrounding surfaces and also become suspended in the air after coughing, sneezing, spitting and other respiratory acts, these are responsible for epidemic spread of many respiratory tract infections to nursing

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people, doctors and other people who visit hospital. Fumigation with formaldehyde will cause carcinoma.

The concept of air pollution is clearly mentioned in *Ayurveda* under the concept of *Janapadodhwamsa* and *Visha Chikitsa*. *Susruta* in *Kalpa Sthana*<sup>[4]</sup> has explained about the *Dushita Vayu* (vitiating air), and treatment for *Vayushudhiprakara* (purification of air) through a process of *Dhoopana* (fumigation). Concept of *Krimi* in *Ayurveda*, has been used in broader sense, it includes all organisms covering wide range of infection. To get rid of these *Krimi* (microbes), *Rakshoghna Vidhi* is mentioned. *Dhoopana* is one of the procedures which are said in classics for the purification of air and as preventive aspect. The present study was planned to evaluate the antimicrobial activity of *Vishaghna Gana Dhupana* in our institute hospital area.

## MATERIALS AND METHODS

In this regard this work is an attempt to understand the utility of herbs of *Vishaghna Gana* mentioned in *Charaka Samhitha*.<sup>[5]</sup> This *Vishaghna Gana* consists of 10 drugs viz., *Haridra*, *Manjishta*, *Suvaha (Rasna)*, *Sukshama Elaa*, *Palindi (Trivrit)*, *Chandan*, *Kataka*, *Sirisha*, *Sinduvara*, *Sleshmataka*. All these drugs have *Madhura Tiktha*, *Katu*, *Kashaya Rasas*, *Ruksha*, *Laghu*, *Guru*, *Tikshna*, *Vishadha*, *Snigdha*, *Pichila Gunas*; *Ushna*, *Sheeta*, and *Anushna Virya*; *Katu*, *Madhura Vipaka*; *Vata-Pitta Shamaka*, *Kapha-Vata Shamaka*, *Kapha-Pitta Shamaka*, *Vatahara*, *Tridosha Shamaka* properties. Based on *Rasa Panchaka* of *Vishaghna Gana* they act antagonist to *Visha* and help in treating disease. These are safe, natural and effective when compared to present insecticidal that are hazardous.

Environment includes water, air, land and the interrelationship which exists between water, air, land and human being, other living creatures, plants, microorganisms and property. Environmental factors play a major role in the cause of death; there is a saying that whatever we take or give to nature, nature gives the same to us. Because of increase of urbanisation there is increase of pollutants, which is causing severe diseases and deaths. Environmental pollution includes Air, Water, and Land Pollution.<sup>[6]</sup> This concept of

pollution was clearly mentioned by *Acharyas* in *Janapadodamsa* and *Visha Chikitsa*.

Air is the one of the essential aliments for the maintenance of life. Air is the common passage for spread of disease. When this air gets *Dushita* (vitiating) that if air is poisoned, animals develop cough, nasal catarrhal, headache and severe eye diseases, birds often fall to the ground due to exhaustion.<sup>[7]</sup>

“Fumigation is the exposure till the action of smoke or of fumes of any kind as a means of disinfection or eradication. It is derived from the Latin term “Fumus” which means smoke and “ago” means to drive away. The fumigation carried out using fine powder of selected dry drugs with the intention of *Nirjantukarana* (disinfection) is called as *Dhoopana*.”<sup>[8]</sup> Medicines which are used in the form of smoke by burning of it are called as *Dhoopana*. *Dhoopana* is a method by which drugs of herbal, herbo-mineral or animal origin are used for fumigation. *Dhoopana* utilizes only natural substances and therefore is absolutely safe for environment as well as human beings. *Dhoopana* is the part of therapeutics in *Ayurvedic* system. *Dhoopana* is one of the measures mentioned for the maintenance of internal and external environment. Good smelling fumigants have psychological effects comparable to modern aromatherapy.<sup>[9]</sup>

***Dhoopana* Uses:** *Dhoopas* are widely used in *Ayurvedic* treatments for various reasons:

- For sanitization and purification of premises.
- For sterilizing the pots in which medicines are to be stored.
- For disinfecting the *Kumaragara*.
- For repelling the insects, poisonous animals etc.
- For facilitating proper development of children.
- *Dhoopana* has broad spectrum of psychological and medical significance
- Fumigation acts as germicide, pesticide, insecticide etc.,
- *Healing Vrana*,
- *Yonivyapada*,

- *Karna Rogas*
- Disinfecting *Bhesajagara, Vranagara,*
- Sterilising *Asavas* and *Aristas*.
- For treating diseases such as *Balagraha* (infectious paediatric diseases), skin diseases, cold, fever due to *Vatadosha*, epilepsy, etc.

### Importance of *Dhoopana* in *Agada*

- Toxicology is the specialized area of science that deals specially with animal, plant and microbial toxins.
- Purity of external environment effect the purity of food, water and air.
- Thereby the polluted environment i.e., toxic environment affects the health and wellbeing of human as well as plants, animals and properties.
- In order to reduce microbial effect *Ayurveda* recommends *Dhoopana* as method of preventive and curative aspect.

### Present Need For *Dhoopana*<sup>[10,11]</sup>

- Antimicrobial resistance is one of the biggest health challenges facing humanity that must be tackled with all seriousness.
- 37% of house hold dusts are contributing by these microorganisms
- Chemical liquids and vapours used for the purpose of fumigation have their merits and demerits.
- Safety and efficacy concern have highlighted the need for alternative methods.
- Fumigation is used to inactivate biological material that may be capable of causing diseases.
- The disadvantages of chemical disinfectants include development of drug resistance, toxicity and hypersensitivity reactions.

Hence, *Dhoopana* today can play a major role as a disinfectant as it is eco-friendly and relatively cheaper.

### DISCUSSION

*Haridra, Manjista, Suvaha, Sukshma Ela, Palindi, Chandana, Kathaka, Shirisha, Sindhuvara, Shleshmataka* these are 10 drugs explained under *Vishaghna Gana Dravya*. These drugs are having Anti-

microbial, Anti-oxidant, and Antibacterial etc. properties. *Vishaghna Gana* drugs have potential property to reduce the level of air microbes which are harmful to health and which are acting as mosquito repellent. *Ayurveda* recommends *Dhoopana* as preventive and curative method for cure of toxicity, so this method has to be followed regularly to reduce common illness. This can be practised in rural and hospital area for reducing spread of diseases.

### Mode of action

Method of fumigation completely fills the area with gaseous fumigants to suffocate the microbes and pests within. Drugs which are used for *Dhoopana* have property of disinfectants, anti-microbial, anti-septic properties. *Dhoopana* acts as *Sroto-Shodaka, Kaphaghna*.

### CONCLUSION

*Dhoopana Dravyas* are effective against air borne microorganisms. It has showed its antimicrobial property against bacterial and fungal species. The procedure can be adapted daily as a healthy practice in college hospital area as a preventive and protective. *Dhoopana* is less expensive procedure which can be used in hospital area daily as sterilization method in order to reduce nosocomial infections. Fumigation acts as both preventive and curative procedure. As it is said prevention is better than cure.

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