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## Concept of dhoopana and its role in prevention of air born infection during covid -19 outbreak

Ashlesha Gopal Gond<sup>1</sup>, Roshna Bhutada<sup>\*2</sup><sup>1</sup>Mahatma Gandhi Ayurved College And Research Centre Salod (H) ,Wardha 442001, Maharashtra, India<sup>2</sup>Department of Shalakayatantra , Mahatma Gandhi Ayurved College And Research Centre , Salod (H) ,Wardha 442001, Maharashtra, India

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### ABSTRACT

Diseases that is caused by pathogens comes under airborne diseases. It can be transmitted through the air. It travels over a particular time and distance in the form of small particles. They may be viruses, bacteria or fungi. It may spread through breathing, talking, sneezing, coughing , etc which generate droplets in the air. Dhoopana Chikitsa (medicinal fumigation ) is one of the important faculties in Ayurvedic treatment. It is an example of drug delivery through the inhalation route. Due to its advantages like easy administration, potential to penetrate blood brain barrier, higher bioavailability its effect are more compare to other form. It is used in various ailments and many dhoop yogas (formulations of fumigation) are found in Ayurvedic samhitas. Reference of dhoopana can be traced to vedic period and has been rooted in our traditions. Modern researches have also verified its ability as purifying ,disinfecting and sterilizing medium. Dhoopana is said to be extremely effective in preventing as well as curative aspects, yet, there remains an ample scope in this area as its practice is seldom in use. Kashayap Samhita has mentioned number of dhoopana formulations and present study is an effort to assess the efficacy of the same.



### \*Corresponding Author

Name: Roshna Bhutada

Phone: 8766866422

Email: drroshnarathi@gmail.com

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### INTRODUCTION

Ayurveda the ancient science of, has always focused on the nature and maintenance of good health in an individual. The seers of ayurveda realized this dynamic equation and emphasized on the importance of man and its environment. Dhoopana is

an inseparable part of therapeutics in this system. Dhoopana is one of the measures mentioned for the maintenance of the internal and external environment of man. Medical substance or mixture of medical substance which is burnt in a specific way to make a smoke is called Dhoopana. It is a technique by which herbal drugs, mineral and animal origin are used for fumigation and to fumigate various things are used which causes no harm to the environment as well as human beings (Anantkumar *et al.*, 2013). Traditional method of sterilization of house and place around it by dhoopana is still in practice. Sterilization of air by homa havana and yagnya i.e. by agnihotra is done since vedic period (Anantkumar *et al.*, 2013). Dhoopana has also been mentioned for its antimicrobial and on broad spectrum of aesthetic, spiritual, psychological and medical significance.

### Litreture Review

In Ayurveda many terms indicated pathogenic and non pathogenic organism and its wide range to cause infection. To get prevention from these Rakshoghnanidhi is indicated. Kashayap Samhita explains that dhoopa substance should be collected by vaidya himself with utmost purity and sincerity (Sharma, 1992). This substance should be collected from Agneya (south east) or uttar (north) direction on pushya constellation. They are collected, dried made into coarse powder and put on fire to produce smoke or stored at safe place and used as per requirement. There are many dhupana dravyas which possess the quality to kill the microbes. Various dravyas used by Acharyas for dhupan are - Nimba, Guggulu, Sarshap, Vacha, Haridra Ghee, Chandan, Ushir, Ela. All are agni and vayu mahabhuta pradhanaya dravyas which are used for dhoopana karma.

In Kashayap Samhitas an entire chapter named DHOOPA KALPA is dedicated on this subject. Dhooapas are widely used in Ayurvedic treatments for various reason.

1. For sanitization and purification of premises
2. For disinfecting the kumaragara
3. For sterilizing the pots in which medicines are to be stored
4. For repelling the insects, poisonous animals etc
5. For treating diseases such as balagraha ( infectious pediatric diseases ), cold, fever due to vata-dosha, etc

### Aims

To understand concept of dhooapana and its role in prevention of air borne infections.

### MATERIALS AND METHODS

The information is collected from classical Samhitas namely - Charaka Samhitas, Sushruta Samhitas, Kashyap Samhitas, Ashtanga Samhita and Ashtanga Sangraha. In these Samhitas the dhooapana formulations have been mentioned which is beneficial for discarding the microbial contamination. Like any other formulation, for making Dhooapa, various herbs or medicinal substances are collected in their best state.

### Method of preparation

Kashayap Samhita explains that dhooapa substance should be collected by vaidya himself with utmost purity and sincerity (Sharma, 1992). This substance should be collected from Agneya (south east) or uttar (north) direction on pushya constellation. They are collected, dried made into coarse powder



Figure 1: Guggulu



Figure 2: Vacha

and put on fire to produce smoke or stored at safe place and used as per requirement.

### Observations

There are many preventive methods, mentioned in Ayurveda like Sadvrutta (Ideal regimen), Dincharya and ritucharya (seasonal regimen), homa havana, rasayana (Rejuvenation) and dhupana. Out of all above, Dhupana should be specially carried out by health worker. As per Dhupakalpadhaya it is observed that by fumigation, physician can cure all the diseases and gets success in treatment of diseases. To ensure the zero contamination during the procedure and drug preparation, Ayurvedic pharmacy, Aaturagara, panchakarma procedure room, Vranitagara, Kumaragar should be fumigated time to time (Sharma, 2009). Dhooapana has been originated by Fire God Agni, who has taught sages unique technique to get rid of Rakshasa (Micro-organism) by fumigation (Sharma, 2009).

### Source of dhooapa substances

a) Sthavar / plant origin - Nimba, Vidanga etc (Sharma, 1992).

**Table 1: Dhoopana names, references, indication and ingredients according to Brihatrayi**

Sr no	References	Therapeutic indication	Ingredients
1	<a href="#">Anantkumar et al. (2013)</a>	Disinfecting clothes, bed	Jau, Sarshap, Atsi, Hinga, Guggulu, Vacha, Chorpushmani, Brahmi, Duba, Jatamansi, Ashok, Kutki, Snake molt
2	<a href="#">Sharma (1992)</a>	Fumigation of vranagara twice a day for ten days	Sarshap, Neem, Ghee and Lavana
3	<a href="#">Sharma (2009)</a>	Air purification	Laksha, Haridra, Ativissa, Abhaya, Musta, Harenuka, Ela, Tagar, Kushtha and Priyangu
4	<a href="#">Murthy et al. (2005)</a>	For children bedsheet	Guggulu
5	<a href="#">Shanti (2012)</a>	For children bedsheet, pillow and blanket	Dried cow and trivrita

b) Jngama / animal origin – Horn, Hair etc. ([Sharma, 1992](#)).

c) Khanija / minerals – Hartal, Manashila etc.

## RESULTS AND DISCUSSION

A review of the dhoopa mentioned above shows that when burn on fire these substance give beautiful aroma and spread in the atmosphere along with the air. The formulation generally consist of various drugs that show a synergistic effect and help in propagating the activity of the main antimicrobial drug. Almost all the dhoopa ingredients have action of deodorant, antiseptic, insecticidal, anti pyretic, anti inflammatory etc. Mostly Agni and vayu mahabhoota pradhan dravyas are used for this procedure. These are laghu, sheeta, ruksha and vishada in nature. These qualities of Dravyas helps in its rapid spreadability and quicker combustion. Most of the dravyas are volatile in nature. Its volatile nature would be a clear advantage in decreasing the pathogens that contaminate the air and which causes the pathogens to reach the surface. Ample examples of dhoopana are found in Brihatrayi proving their vital role in disinfection and sterilization are given in Table 1.

### Classification

Acharaya Charaka has classified Dhoopa in wound management according to their pharmacokinetic properties. Two types of dhoopa are mentioned in vrana chikitsa as Vranakathinakara dhoopa and vrana mridutakaraka dhoopa.

Similarly Ashtanga Sangraha has mentioned types of dhoopana . Agar, chandana, etc fragrant dravyas have been included in the kathinyakara type .Ghee, vasa and majja have been included in vrana mridu-

takaraka dhoopa ([Murthy et al., 2005](#)).

Aseptic environment is been created by fumigation and prevents infection ([Shanti, 2012](#)).

In number of dhoopana formulations dhoopana has been used against *Rhizoperthadominica*, the volatile oil of Guggulu was found to be highly effective which shows its role as a fumigant. 5(1-methyl, 1-aminoethyl)-5-methyl-2-octanone, an active compound of the methanolic extract of Guggulu gum possessed significant antibacterial activity against gram positive bacteria and moderate activity against gram negative bacteria ([Goyal et al., 2010](#)), (Figure 1).

Over 23 formulations of Vacha has been mentioned. In *Acorus calamus*, the alpha and beta asarone are mainly responsible for antimicrobial activities. Among beta and alpha asarone , beta asarone has high antimicrobial activity as compared to alpha asarone ([Ganjewala and Devi, 2009](#)), (Figure 2).

In most of the formulations Neem is the major ingredient. Neem seed oil Azadirachtin is a proven chemical for its insecticidal properties( Xie S 1995; 1024-1031 ). Not only kills pests but also affects them negatively by acting as feeding and oviposition deterrent, mating disruption, inhibition of growth etc by neem natural fumigant ([Mondal and Chakraborty, 2016](#)).

The camphenecyanol in Ela acts as volatile oil and shows antibacterial properties against pathogens ([Khedekar et al., 2016](#)).

A contrasting profile of glucosinolates which have the biocidal action on different pathogens is found in Sarshapa. Hence it can be used in dhoopana karma ([Panduranga and Nita, 2018](#)).

For air purification wood of *Cedrus deodara* (dev-

daru) is used which have high anti microbial potential which acts as a disinfectant.

## CONCLUSION

Dhoopana Chikitsa is existing since time immemorial . Its root lies in Vedas and is widely used in Ayurveda not only for disinfecting and purifying but also as a remedy to treat various ailments and to prevent the diseases . In this way the dhoopana karma according to Ayurveda can be implemented in order to prevent the air borne infection. Their by using the dhoopan karma we can fight against the pandemic covid -19.

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## Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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