



Formulation and Evaluation of Polyherbal Dhoop (Fumigation) for Sterilization

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Abstract: Dhoop is widely used product in various religious rituals or practices in rural as well as in urban areas in India. Dhoopana is technique practiced in Ayurvedic literature for its contribution in reducing the microbial count in specific areas. There are various types of microbes around us which are mainly responsible for health related problems such as influenza, pertussis, common cold, etc. The patients suffering from Swine Flu, bronchial spasms, bronchitis, bsthma, dyspnoea, rhinitis, bad smell of the nose and mouth can be aided with Ayurvedic medicines. The current work is focused on modifications in general dhoop formulation. Medicated dhoop was prepared by incorporating hydro-distillated extracts of Eucalyptus, Clove, Tulsi, Mentha, Ajwain, and Neem. By performing dhoopana, various air borne diseases may be prevented as the product being easily available in remote areas leading to its sterilization.

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Keywords: Dhoop; dhoopana; antimicrobial; influenza; polyherbal, fumigation

INTRODUCTION

Various methods of sterilization are available in market today, but at the same time it is very necessary to replace hazardous chemical methods used for the sterilization techniques. Dhoopana (Fumigation by various medicinal plants) may be carried out as substitute for ultraviolet irradiations and chemical agents like formalin or ethylene peroxide. The underlying formulation is focused on the use of essential oils along with the use of other agents like cow dung, cow ghee etc. Cow dung has been used since time immemorial to disinfect households in India. In various religious practices such as homa/ havans, cow dung, cow ghee, cow urine, camphor, etc. has been used in order to cleanse the environment and feel pleasant. With the help of this traditional knowledge, we tried to devise a method to prepare a dhoop stick using various cow products and plant powders for cleansing the air. This herbal dhoop stick is prepared from extremely economical sources and has a pleasant smell. It can serve as an alternative to the usage of chemicals for disinfection of air in various areas such as households, hospitals, washrooms, etc.



MATERIALS & METHODS

All powders were procured from local market in Nashik and were screened for their purity and sieved for desired particle size. Cow ghee was used as binder and dried cow dung obtained from local diary which was pulverized in a domestic grinder, acted as biofuel being one of the base. The essential oils used in the product were extracted from their respective biological source (Table 1)

Table 1: Ingredients

Ingredient	Each 5 sticks contain
<i>Eucalyptus globulus</i>	10% v/w
<i>Eugenia caryophyllus</i>	6.6% v/w
<i>Oscimum sanctum</i>	5.6% v/w
<i>Mentha piperita</i>	6.6% v/w
<i>Trachyspermum ammi</i>	2.6% v/w
<i>Azadirachta indica</i>	5.6% v/w
<i>Balanites aegyptiaca</i>	2.6% v/w
<i>Cassia fistula</i>	5% w/w
<i>Camphor</i>	6.6% w/w
<i>Styrax benzoin</i>	13.3% w/w
<i>Commiphora wightii</i>	6.6% w/w
<i>Cow dung</i>	25% w/w
<i>Cow ghee</i>	3.3% w/w

(Weight of 1 stick: 6 gm; Weight of 5 sticks: 30 gm)

MATERIAL AND METHODS

Manufacture of sticks: All the ingredients and cow dung were taken in a clean, dry mortar and pestle and grinded finely. Cow ghee was added as a binder and was mixed well to form a wet mass. A plastic syringe was cut from the apical side to open the mouth of the syringe completely. Dhooop sticks were made using the opened syringe and a plunger. The long masses so formed were cut into desired sizes. These dhooop sticks were kept intact for 24 hours to dry them completely and then stored in an air -tight container. The sticks were put in a container filled with essential oils. The stick being porous by its capillary action rapidly absorbs the oils. Later, these sticks were dipped in neem oil which fixes the previously used volatile oils. These sticks were used for evaluation of cleansing activity.

Microbiological studies: The evaluation of antimicrobial activity was carried out by preparing Nutrient Agar plates in duplicates (2 set of plates exposed in same area) which. One set from each area was exposed to dhooop for one hour (Figure 1). Later, this plates along with those set of plates not exposed to dhooop were exposed to different areas 10 mins (Table 3) and incubated at 37°C for 24 hours in an incubator.

Figure 1: Exposure to dhoop

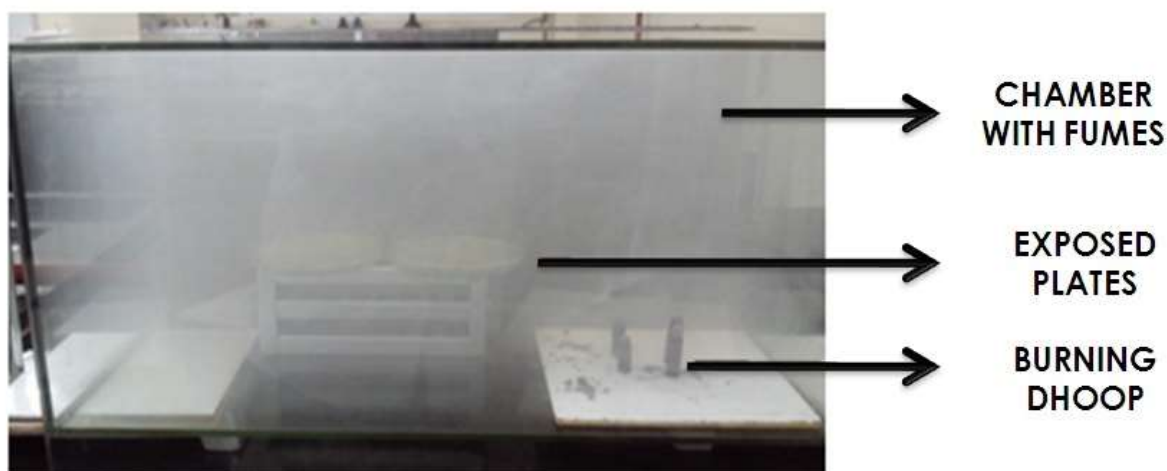


Table 3: Different areas

Area	Time of exposure
Kitchen	10 mins
Washroom	
Laboratory	
Garbage area	

Sensory analysis: A survey was also carried out with volunteers in order to evaluate the acceptability of the herbal dhoop odor amongst 35 people. Various parameters such as smell, appearance and smoke were evaluated.

RESULTS

From the figure 2 and Table 4 and chart below and the above figures, it can be seen that the Dhoop elicited antimicrobial activity.

Table 4. Antibacterial activity of Dhoop

Area	No. of colonies before exposure to dhoop	No. of colonies after exposure to dhoop
Kitchen	15	5
Washroom	Uncountable	12
Laboratory	7	1
Garbage	Uncountable	21

Figure 2: .Antibacterial activity of Dhoop



Thus all the exposed plates, were almost clear with negligible count of colonies. This can help us in predicting the antimicrobial activity of this herbal dhoop stick. During the survey , most of the volunteers found the smell of the dhoop appreciable. Majority of them found the smell woody and resinous and a few found it minty and peppermint (camphor) like. 80% of them did not experience any irritation in their eyes. All of them found the appearance acceptable and accepted that they would like to use/ recommend the dhoop, if it has proven to have anti-microbial activity (Table 5)

Table 5: Odor of Dhoop

Questions	Yes	No
Is the smell appreciable?	34	1
Smoke is irritating?	3	32
Use the product at home?	34	1
Will recommend the product?	35	0
Woody or resinous smell?	33	2
Minty smell?	34	1
Relief from nasal congestion?	35	0



CONCLUSION

This herbal dhoop stick is prepared from extremely economical sources and has a pleasant smell. It can serve as an alternative to the usage of chemicals for disinfection of air in various areas such as households, hospitals, washrooms, etc.

DECLARATION OF CONFLICT OF INTEREST

No conflict of interest to declare.

REFERENCES

Balanitesaegyptiaca(L.) Del. (Hingot): A review of its traditional uses, phytochemistry and pharmacological properties J. P. Yadav, Manju Panghal Department of Genetics, M.D. University, Rohtak - 124 001, Haryana, India

Yadavji Trikamji Acharya, Sushrut Samhita with the Nibandhasangraha Commentary of Dalhanacharya, Chaukhamba Publication, Varanasi, 6th edition, 1997; Su. Chi. Chap 40.Dhoom-Nasya-Kavalgraha Chikitsa, Shlok 19, 554.

The Ayurvedic Formulary of India. 2nded. New Delhi: Govt of India, Ministry of Health and Family welfare dept of Indian system of medicine; Part 1 & 2

Anti-inflammatory activity of 1,8-cineol (eucalyptol) in bronchial asthma: a double-blind placebo-controlled trial U.R. Juergens*, U. Dethlefsen, G. Steinkampz, A. Gillissen, R. Repgeszand H. Vetter* Department of Pneumology, Medical Outpatient Clinic, Bonn University Hospital, Germany

Ananthakumar V et al; To Study the Efficacy of Ayurvedic Dhoopan for Operation Theater Sterilization, International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, 2013; 2(1):143-147.