



A REVIEW ON DHOOPKALPADHYA Y -A CRUCIAL CONTRIBUTION OF KASHYAP SAMHITA AS A PREVENTIVE MEASURE FOR PANDEMIC SITUATIONS

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ARTICLE INFO

Article History:

Received 06th May, 2021

Received in revised form 14th

June, 2021

Accepted 23rd July, 2021

Published online 28th August, 2021

Key words:

Dhupan, Kashyap Samhita, Dhoopkalpadhya, Rakshavidhan, Rakshoghna dravyas

ABSTRACT

Ayurveda is the system of traditional Indian Medicine & science of life, with a holistic approach. The Primary motto of Ayurved is to prevent diseases and the secondary motto is to treat the diseases if any. Thus, preventive measures had given more importance **'prevention is always better than cure.** Measures for the prevention of diseases are- Aahar, Vihar, Dincharya, Rutucharya, etc. Since the ancient period, Dhupan (fumigation) is one of the parts of preventive measures. Dhupan karma is practiced for purifying the environment by eradicating micro-organisms, hence Dhupan has importance to prevent infection. In ancient days various methods were used to get rid of harmful micro-organisms in our environments viz- Agnihotra, Yagnyas, Dhupan, Rakshoghna Karma, Rakshavidhan, Krimihar dravyas external application, During Vedic period Yagnyas and Havan had commonly practiced for environmental purification. In Samhita Period Yagnya, Rakshavidhan, Dhupan was more practiced. The classical procedure of Dhupan was replaced by modern fumigation, the chemicals like formaldehyde, which are antimicrobial are toxic to human beings-procedures, effectiveness, convenience, cost, and types of allergies by fumes, hence the present literature research is aimed to compile the efficacy of these Rakshoghna, Krumighna, Kandughna dravyas were studied for their collective effect on a particular disease.

According to Ayurveda, Dhupan is described especially as a part of treatment and it is in scattered form, in various chapters; but Acharya Kashyapa had dedicated one special chapter for Dhupan in detail. Acharya Kashyapa had described all Dhupan yogas with their special mode of action. In Dhoopkalpadhya. Acharya Kashyapa had described various Dhupan yogas, and types of Dhoop and Dhupan dravyas; in which different materials originated from medicinal plants as well as animals, were indicated in various diseases, most of these dravyas are easily available in the present day, so broad-spectrum Dhupan Kalpas can be used formulated and practiced as a community and home fumigation in this covid 19 Pandemic situation for infection control. During this Pandemic and stressful situation of Covid-19, Ayurvedic measures for prevention of infectious diseases is a ray of hope and amongst of all Dhupan is a most effective way, hence this aims the study, and Acharya Kashyap's Contribution towards Dhupan crucial, as Kashyap samhita had dedicated the whole chapter as Dhoopkalpadhyay.

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INTRODUCTION

Since the Vedic Period sterilization of the home is being done through Havan, Dhupan, Agnihotra, Rakshavidhan, and purification of the atmosphere is being done through Yagnyas & Dhupan. Dhupan is a procedure in which fumes produced from specific drug formulations are inhaled/exposed by patients for therapeutic relief or externally as a cleanser to the environment.^{[3][4]} Though the principle of fumigation is available in other classics also, as certain fumigations are prescribed specially for the treatment of Jwara, but not any

Ancient text has described Dhupan to the greater extent like Kashyap samhita. (C.S.C1.37209, 307.2-309.1, 341; S.S.U.39/262-263.1; A.S.Ci.2/98, 134.2-137.1; A.H.Ci.1/143, 162.2-164), insanity (C.S.C1.9/74.2-75; S.S.U.62/16,34; A.S.U.9/27, 29-31; A.H.U.6/42-44) Aparasanga and Dukhaprasuti, Garbhasang (C.S.Sā.8/41; S.S.Sā.10/11, 21 A.S.Sā.3/33-34 (1-7); A.H.Sā.1/83-87)^{[3][4][5][6]}

Kashyap Samhita had described pharmaceutical preparations for fumigations. In Kashyap Samhita Dhoopkalpadhya is a crucial contribution of Acharya Kashyapa in the field of Rakshavidhan- infection control through Ayurveda. By keeping these objectives we set a review of various Dhupan dravyas of Dhoopkalpadhya and their importance in the present scenario of Covid-19 Pandemics.^{[8][9]}

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Ayurveda is the eternal and holistic science of aiming at maintaining a healthy life and curing the disease if any.^[7]The field of Ayurveda is broadly divided into eight branches Kaya, Bala, Graha, Urdhvanga, Shalya, Danshtra, Jara, Vrushan. Kaumarbhritya-Balroga; refers to the science of diseases and care of children, right from conception till adolescence. The environment around us is loaded with billions of microorganisms, are present in the, commonest organisms isolated were Staphylococcus aureus (37.22%), Klebsiella pneumonia (27.01 %), and Escherichia coli(19.70%). A maximum of the microbes live in the human body and are not harmful. Some of these microbes may prove dangerous in immune-compromised hosts and children, so disinfection or fumigation has its importance to control infection. Ayurveda has the prime motto of the preventive and secondary motto is the curative aspect of disease or infection hence Rakshavidhan was first explained in ancient Ayurvedic classics but Acharya Kashyapa explained a separate chapter in Kashyapa Samhita on fumigation called Dhoopkalpadhya. Dhupan or fumigation with medicinal fumes is an important part of the sutika-Paricharya according to Kashyap Samhita. Dhupana is a method by which drugs of herbal, herbomineral, or animal origin are used for Fumigation. Dhupan drugs/herbs have medicinal properties like anti-inflammatory, anti-microbial action.^[8]Various formulations of Dhupana have been mentioned in our classics. Acharya Kashyap had contributed to a great extent, Kashyapa had dedicated a chapter solely for Dhupana. Dhupana has a broad spectrum of aesthetic, psychological, and medical significance. Hence in the current Pandaemic situation of Covid-19 Dhoopkalpadhyay was reviewed by Kashyap Samhita for its importance and contribution in infection prevention of disease as a preventive measure.^[10]

COVID 19 is one of the pandemic situation caused by Virus SARS-CoV-2, it created pandemic with Covid-19 . This infection spreads from droplets, aerosol, and fomite by the affected patient's cough, sneeze, sputum, or nasal discharge and easily contaminate the environment, by pandemic waves. In such conditions of the Pandemic whole world is looking with a ray of hope to Ayurved; as since ancient period Ayurved had played a vital role by Rakshavidhan, Yagnya for maintaining personal and social health.

VATA, PITTA, and KAPHA are Tridoshas and important constitutions of our bodies. When all three doshas are in a balanced state the person will remain healthy, vitiation of a dosha will cause a different type of disease.^[4]Acharya Sushruta has defined infectious diseases as Aupsargic Roga.COVID19 is also an infectious pandemic disease (Aupsargic and Janapadodhwasa disease). Ayurveda has mentioned the concept of Janapadodhwasa, which refers to the situation where there is extensive damage to the environment and lives. Acharya Charak in Vimansthan has defined Janpadodhwansa (Pandemic) root cause of which is VAYU, JAL, DESH, KALA .In Janapadodhwansa disease, persons living in different areas, different age groups, different Prakriti are affected with the same disease at the same time^[5]. However, Dhupan did not gain much attention as a prospective field with multiple research opportunities. Fumigation is an age-old method of sterilization since time immemorable.

Present Need of Research

In Ayurved, so many Rakshoghna herbs are described in Rakshavidhan and Dhupan, which help to keep the environment healthy like Guggulu, Vacha, Sarshapa, Ghruta, Jatamansi, Nimba, Sarjarasa.Hence Dhupana- can be a natural way for fumigation or sanitization of the environment nowadays. It is cost-effective, eco-friendly, simple, and has fewer side effects as compared to chemical fumigation. Various research works have been done to assess the role of these Rakshoghna herbs used for Rakshavidhan or fumigation^[8] ^[10]^[11] In such pandemic situation like Covid-19, preventive measure is a major key, for making the environment with a lesser load of microbes responsible for the pandemic, is a better way to prevent such diseases. Many disinfecting chemical agents are used for sterilization and sanitization of the environment. The disadvantages of chemical disinfectants include the development of drug resistance, toxicity, and hypersensitivity reactions^[4] There is an urgent need to find a specific cure for the disease and efforts should be made to control the spread of developing SARS-CoV-2 by specific antimicrobial herbal drugs.

Types of Dhupan

According to Acharya Kashyapa, the main source of Dhupa is Agni,^[9] according to the origin of the substances, it can again be of 3 types

Sources of Dhoopa^[9]

1. **Sthavara**-(Plant origin)- Vidanga, Nimba, Guggula, Vacha, Sarshapa, Kusthahara, Krimighna, Kandughna & Vranahara Gana, and Rakshoghna and Bhootaghna dravyas are used for Dhupan. These drugs mostly have antimicrobial properties.
2. **Jangama**-(Animal origin)- Ghrita, Honey, hair, nails, horns, etc. have been used where keratin is a structural component which is having antimicrobial activity.
3. **Khanija** (Minerals)- sulfur compounds, Manashila Hartal, Sauviranjan the fumigation indicated by Agni devata came into existence for the welfare of mankind, (which are) based upon

Types^[9]

1. **Dhupa** (Fumigation)
2. **Anudhupa** (Subsequent Fumigation),
3. **Pratidhupa** (Antifumigation)

In some diseased conditions, strong fumigation is advised by called Dhupa Yog. Such strong fumigation may cause adverse reactions, so it should be followed by subsequent fumigation known as Anu Dupa (Subsequent Fumigation), and if any side effect occurs, to treat adverse reaction Antifumigation Pratidhoop should be practiced. Precaution should be taken that Subsequent fumigation is required to prevent recurrence of disease

Method of collection of Dhupan dravyas

Collection- Pusya or Maitra Nakshatra

Direction- south-east direction (presided over by Agni) or northward direction.

Storage in new earthen pots.

Stability- If preserved in air-tight containers, Dhupan Yog has a stability of 2 yrs.

Grahyagrahyatva- the materials should possess their original color & fragrance.

Collection of Dhupan dravyas & Procedure of Dhupa preparation-

First of all, the physician had observed fast, cleanliness and having taken bath, reciting (the mantras), performing the sacrifice and listening to desired words, should collect dravya for fumigation during Pusya or Maitra nakshatra from a south-east quarter which is presided over by Agni and northward direction (the drug grown in these directions.^[9] (K.S.1/42-46.) Four clean young girls (virgins) should pound cautiously these dravyas, this fumigation (material) should then be filled in a new pot (earthen pot) and hidden in a protected place, it should be used in time of need. The Vaidya and patient can use these Dhupan Yogs after collecting them immediately.

These earlier formulated (fumigations) provide success. If after the first fumigation, subsequent fumigation is not given, then the disease recurs immediately, so for this purpose, prevention of recurrence, fumigation should be repeated. The physician should fumigate the Clinic or hospital, clothes, bed, and sitting place of the children possessings^[9]

Method of fumigation (verses 57-58)

When Dhupan is indicated for Disease treatment? (K.S.1/49-56)

When Rakshasas-microbes, tortured the born children of sages, then all great sages possessing oblation, recitation, and penance, went to the shelter of Agni, then satisfied Agni said that accept and use these fumigations given by me, (by these) there will be no fear from Rakshasas, Bhutas, and Pichasas. They should use these for born, growing, and diseased children. In this way fumigation indicated by Agni, devta came into existence for the welfare of mankind.

Name of Dhupa	Dhupan dravyas	Indication	Reference
1	<i>Kushtha</i> (Saussurea lappa C.B. Clarke), <i>Putika</i> (Pongamia glabra Vent.), <i>Ambar</i> , <i>Hingu</i> , <i>Vacha</i> (Acorus calamus Linn.), <i>Sarshapa</i> (Brassica campestris) Body hair of Goat,	Good for fumigation	K.S.1/1
2	Ghruta, horn of Sheep, hoop of Horse and Elephant body hair of Monkey, Salyaka & Mongoose <i>Ghruta</i> , <i>Sarjara</i> , <i>Bhallatak</i> (Semecarpus anacardium), <i>Sauviranjan</i> , <i>Shileyak</i> (Parmelia perlata), <i>Haridra</i> (Curcuma longa), <i>Daruharidra</i> (Berberis aristata), <i>Laksha</i> (Encrustations of lac Insect – Laccifera lacta), <i>Ushir</i> (Vetiveria zizanioides), <i>Sarshap</i> (Brassica campestris), <i>Arjak Pusp</i> a (flower of Ocimum sanctum), <i>Vidanga</i> (Embelia ribes), <i>Tagar</i> (Veleriana wallichii), <i>Tamalpatra</i> (Cinnamomum tamala), <i>Vacha</i> (Acorus calamus), <i>Hingu</i> (Ferula foetida), <i>Netrabala</i> (coleus vetiveroides).	Best for fumigation	K.S.1/2
3. Kumar Dhupa	<i>Ghruta</i> , <i>Sarpa Nirmok</i> (slough of snake), <i>Grudhra vit</i> (feces of vulture), <i>Kaushik vit</i> (feces of owl), <i>Vacha</i> (Acorus calamus), <i>Hingu</i> (Ferula foetida).	Proper growth and development of children, Use of this <i>Dhupa</i> increases progeny.	K.S.1/3-4
4. Grahapaha Dhupa	<i>Ghruta</i> , <i>Guggul</i> (Commiphora mukul), <i>Bilva</i> (Aegle marmelos), <i>Devdaru</i> (Cedrus deodara), <i>Nameru</i> (Ochrocarpus longifolius Benth & Hook. F.), <i>Yav</i> (Hordeum vulgare).	For treatment of <i>Graharoga</i> and Epilepsy.	K.S.1/5
5. Maheshwar Dhupa	<i>Ghruta</i> , <i>Goloma</i> (Cows hair)	Used in <i>Graharoga</i>	K.S.1/6
6. Agneya Dhupa	<i>Ghruta</i> , <i>Haya lom</i> (horse hair), <i>Khara lom</i> (Donkeys hair), <i>Ushtra lom</i> (Camels hair), <i>Rushabhak</i> - Nakha (Nails of Ox)	Specially useful in all diseases Diseases of <i>Kapha</i> doshas and diseases of unknown origin.	K.S.1/7 K.S.1/8-9
7. Bhadrakar Dhupa	<i>Ghruta</i> , <i>Siddharthak</i> (Brassica alba), <i>Hinga</i> (Ferula foetida), <i>DevNirmalya</i> (flowers or herbs offered to God), <i>Akshata</i> (unbroken rice), <i>Sarpa tvak</i> (slough of snake), <i>Bhikshu sanghati</i> (saffron color cotton cloth)	Used for Protection	K.S.1/10
8. Rakshoghna Dhupa	<i>Ghruta</i> , <i>Siddharthak</i> (Brassica alba), <i>Madhu</i> (Honey), <i>Bheda Shrunga</i> (horns of Aries), <i>Ajapaya</i> (milk of goat), <i>Khara Mutra</i> (urine of Donkey), <i>Khara lom</i> (donkey's hair), <i>Soma</i> (camphor) <i>Ghruta</i> , <i>Siddharthak</i> (Brassica alba), <i>Kushtha</i> (Saussurea lappa), <i>Bhallatak</i> (Semecarpus anacardium), <i>Vacha</i> (Acorus calamus), <i>Basta loma</i> (body hair of male Goat), <i>Tagar</i> (Veleriana wallichii), <i>Bhurjapatra</i> (Betula utilis), <i>Guggul</i> (Commiphora mukul)	Protection against negative, bad, unknown energies Useful in all diseases Specially in Epilepsy, <i>Graha Rogas</i> and <i>Upagraha</i> <i>Rogas</i>	K.S.1/11-12 K.S.1/13-14
9. Uttam Dhupa	<i>Ghruta</i> , <i>Siddharthak</i> (Brassica alba), <i>Chorak</i> (Angelica galuca), <i>Guggul</i> (Commiphora mukul), <i>Varahi kanda</i> (Dioscorea bulbifera), <i>Jatamansi</i> (Nardostachys jatamansi).	Useful for to get one attractive	K.S.1/15
10. Dashanga Dhupa	<i>Shreeveshtak</i> (Pinus roxburghii), <i>Laksha</i> (Encrustations of Laccifera lacta), <i>Padmak</i> (Prunus cerasoides), <i>Chandan</i> (Santalum album), <i>Devadaru</i> (Cedrus deodara), <i>Tulasi</i> (Ocimum sanctum), <i>Shal</i> (Shorea robusta).	Beneficial during summer season, and also in seizure of <i>Shakuni</i> , <i>Pundarika</i> , <i>Revati</i> and in aggravation of <i>Shlesma</i> .	K.S.1/16-17
11. Moha Dhupa	<i>Ghruta</i> , <i>Majja</i> , <i>Vasa</i> , <i>Laksha</i> (Encrustations of lac insect-Laccifera lacta).	Used in Children having <i>AlpaDoshas</i> , <i>Krisharugnas</i> , <i>Graharogas</i> Provides pleasure	K.S.1/18 K.S.1/19
12. Varun Dhupa	<i>Ghruta</i> , <i>Pippali</i> (Piper longum), <i>Brihi Tusha</i> (rice husk), <i>Kapiloma</i> (body hair of monkey), <i>Kapivacha</i> (Monkey skin), <i>Vacha</i> (Acorus calamus), <i>Sarshap</i> (Brassica alba), <i>Kushtha</i> (Saussurea lappa), <i>Ela</i> (Elettaria cardamomum).	Useful in all <i>Graha Rogas</i> .	K.S.1/20
13. Chatur Agni k Dhupa	<i>Ghruta</i> , <i>Sarpa tvak</i> (slough of snake), <i>Bilva</i> (Aegle marmelos), <i>Sara</i> , <i>Siddharthak</i> (Brassica alba), <i>Laksha</i> (Encrustations of lac insect - Laccifera lacta).	Brings Prosperity.	K.S.1/21
14. Nandak Dhupa	<i>Shvan vit</i> (feces of Dog), <i>Shva mutra</i> (urine of Dog), <i>Mayur loma</i> (Peacock feathers), <i>Vacha</i> (Acorus calamus), <i>Ghruta</i> , <i>Sarshap</i> (Brassica alba).	Useful in all <i>Graha Rogas</i>	K.S.1/22
15. Karna Dhupa	<i>Ghruta</i> , <i>Kunjar danta</i> (Elephant tusk), <i>Aja lom</i> (body hair of goat), <i>Mesha lom</i> (body hair of Aries), <i>Goshrunga</i> (cow horns).	Considered to be auspicious.	K.S.1 K.S.1/23
16. Shree Dhupa	<i>Ghruta</i> , <i>Granthaparni</i> (Leonotis nepetaefolia), <i>Jatamansi</i> (Nardostachy jatamansi), <i>Tagar</i> (Veleriana wallichii), <i>Jalamusta</i> , <i>Hriversa</i> (Coleus vetiveroides), <i>Shatapushpa</i> (Anethus sowa), <i>Hartal</i> (yellow orpiment), <i>Manashila</i> (Realgar), <i>Musta</i> (Cyperus rotundus), <i>Ela</i> (Elettaria cardamomum).	All the diseases and <i>Grahas</i> . Used with <i>pratidhupa</i>	K.S.1/24-25
17. Punya Dhupa	<i>Ghruta</i> , <i>Siddharthak</i> (Brassica alba), <i>Laja</i> (puffed rice), <i>Kusha</i> (Desmostachya bipinnata), <i>Brahmi</i> (Bacopa monniera).	Useful in all <i>Graha Rogas</i> .	K.S.1/26-27
18. Shishuk Dhupa	<i>Ghruta</i> , <i>Shvdanshra</i> , <i>Vasuka</i> , <i>Haridradvaya</i> , <i>Paropelava</i> (Cyperus platystilis Br.), <i>Vacha</i> , & <i>Bharangi</i> (Clorodendrum serratum)	Brings pleasure	K.S.1/28
19. Bramha Dhupa	<i>Ghruta</i> , <i>Padmak</i> (Prunus cerasoides), <i>Ushir</i> (Vetiveria zizanioides), <i>Netrabala</i> (Coleus vetiveroides), <i>Nagakeshar</i> (Mesua ferrea), <i>Sarjans</i> (Vateria indica).	Useful in all Diseases.	K.S.1/29
20. Prati dhupa	<i>Ghruta</i> , <i>Vamar loma</i> (body hair of monkey), <i>Kukkutanda</i> (hen egg), <i>Vacha</i> (Acorus calamus), <i>Siddharthak</i> (Brassica alba).	Useful in all Diseases.	K.S.1/30
21. Sarvarog Nashak Prati dhupa	<i>Ghruta</i> , <i>Nimba</i> (Azadirachta indica) – <i>Patra</i> , <i>Mool</i> , <i>Pushpa</i> , <i>Phal</i> , <i>Tvak</i> <i>Ghruta</i> , <i>Nimbapatra</i> , <i>Kharamutra</i> , <i>Vacha</i> , <i>Jatu</i> , <i>Sarshapa</i> <i>Ghruta</i> , <i>Nimbapatra</i> , <i>Jatu</i> , <i>Sarjara</i> , <i>Akshata</i> , feces of <i>Bhasa</i> , <i>Uluka</i>	Useful in all Diseases. Prati dhupa	K.S.1/31 K.S.1/32
22. Mahoday Prati dhupa	<i>Ghruta</i> , <i>Nimba</i> (Azadirachta indica), <i>Tulasi patra</i> (Ocimum sanctum), <i>Ashvagghna patra</i> (Nerium indicum), <i>Go loma</i> (cow hair), <i>Mesha lom</i> (aries hair), <i>Basta lom</i> (goat hair).	Cures Epilepsy	K.S.1/33
23. Arista Dhupa	<i>Ghruta</i> , <i>Akshata</i> (unbroken rice), <i>Jati Pushpa</i> (Jasminum grandiflorum), <i>Madhu</i> (Honey), <i>Siddharthak</i> (Brassica alba), <i>Vacha</i> (Acorus calamus)	Useful in all Diseases.	K.S.1/34
24. Prati Dhupa	<i>Ghruta</i> , <i>Shallaki</i> , <i>Jatipushpa</i> , <i>Shirish</i> , <i>Nameru</i> <i>Ghruta</i> , <i>Guggul</i> (Commiphora mukul)	All diseases originating from Negative energy Brings prospersy	K.S.1/35 K.S.1/36
25. Apasmrshak Dhupa	<i>Ghruta</i> , <i>Devadaru</i> (Cedrus deodara)	Useful in all <i>Graha Rogas</i> .	K.S.1/37-38 K.S.1/37-38
26. Sarva Rogaha Dhupa	<i>Ghruta</i> , <i>Krushna Agaru</i> (Aquilaria agallocha)	Useful in all <i>Graha Rogas</i> .	K.S.1/37-38
27. Gana Dhupa	<i>Ghruta</i> , <i>Sarshap</i> (Brassica campestris)	Useful in all <i>Graha Rogas</i> .	K.S.1/37-38
28. Swastik Dhupa	<i>Ghruta</i> , <i>Kusha</i> (Desmostachya bipinnata), <i>Kasha</i> (Saccharum spontaneum), <i>Shara</i> (Ceratophyllum submersum), <i>Darbha</i> (Eragrostis cynosuroides), <i>Ikshu</i> (Saccharum officinarum).	Useful in all <i>Graha Rogas</i> .	K.S.1/37-38
29. Grahanashan Dhupa	<i>Guggulu</i> should mixed with <i>Dashang dhupa</i> .	<i>Graharognashak</i>	K.S.1/37-39
30. Grahanashan Dhupa			
31. Grahanashan Dhupa			
32. Grahanashan DHOOPA			
33. Grahanashan Dhupa			
34. Sarvarognashak Dhupa			

Though fumigations are described by other authors also, the long list of fumigations of Dhupakalpadhyay for various purposes other than those mentioned by other authors and also classification as Pratidhupa, Anudhupa, etc are also contributions of Kashyap Samhita.^[9]

MATERIAL AND METHODS

The information is collected from various Ayurvedic Samhitas, Bruhatrayis, Ayurvedic texts, different textbooks, articles, and published research papers, journals, etc.

Methods

Dhupakalpadhyaya is a detailed chapter in Kashyapsamhita, Kalpasthan, which is an original and great contribution of Kashyapa Dhupan, by keeping these things in mind objectives were set to collect information of various Dhupan dravyas in Dhoopkalpadhya y for stating the importance of Dhupan in the prevention of disease. This review article is based on information that was collected through various authentic textbooks, Samhitas, journals. A critical review has been done and a compilation of various facts address that Dhupan is the need of the hour. Information was collected from Kashyap Samhita Dhoopkalpadhyay, and was classified into tables –

Dhupan Yogas mentioned in- Chapter -1, Dhupakalpadhyay, Kalpasthan, Kashhyap Samhita (1/1-39 Verse)

ensure zero contamination during drug preparation and procedure. The physician must fumigate the Patient's belongings like clothes, bed, and sitting-place, etc.

Table 1 -shows the importance of dhupa Kalpa used for the prevention and cure of many diseases. Most of the have are Graharoganashaka and are used in pediatrics.

Table 2- shows how many times a drug originated from a plant is used in dhupa from Dhupakalpadhyay. In this chapter of Kashyap Samhita, Vacha is used most of the time -9 times in dhupa you. Siddharthaka is used 7 times in dhupa you, Sarshapa & Guggulu is used 6 times repeatedly in dhupa you, that suggests the probable antimicrobial action of these dravyas, which can be evaluated in vitro.

Table 3- shows how many times a dravya originated from animals is used in dhupa yog. Ghruta is used maximum times - 28 times in dhupa yog, It shows the importance of this dravya in the formation of dhupa yog which suggests its binding action, initiating action of Dhupan karma, and probable action as antimicrobial. Kapil, Laksha is used 3 times, Kapilom contains Keratin which is antimicrobial in action. Laksha has Kashaya Rasa which prevents the growth of microbes hence these two dravyas are potential antimicrobial agents.

Table 2 Dhupan dravyas from plant origin

Dravya name	Frequency of utilization
Vacha	9
Siddharthaka	7
Sarshapa, Guggulu	6
Hingu	4
Kushtha, Sarjaras, Tagar, Deodaru, Akshata, Nimbapatra	3
Bhallatak, Haridra, Daruharidra, Netrabala, Ela, Kusha, Bhurjapatra, Jatamansi, Padmak, Jatipushpa, Nameru	2
Putik, Ambar, Shaileyak, Ushir, Vidang, Tamalpatra, Pippali, Vrihitusha, Bilva, Granthiparni, Jalamusta, Rhiber, Shatapushpa, Musta, Laja, Kasha, Darbha, Shara, Ikshu, Bramhi, Gokshur, Vasuk, Bharangi, Nagkeshar, Yava, Sara, Devnirmalya, Som, Choraka, Varahikanda, Shreeveshtaka, Chandan, Shaal, Nimbapushpa, Nimbajal, Nimbamool, Nimbatwak, Ashwaghan Patra, Shallaki, Krushnagaru	1

Table 3 Dhupan dravyas from animal origin

Dravya name	Frequency of utilization
Ghruta	28
Kapilom, Laksha	3
Golom, Madhu, Kharamutra, Ajaloma, Meshalom, Meshashruna, Sarpanirmok	2
Ajalom, Hoop of Horse, Hoop of Elephant, Body hair of Salyak, Body hair of Moongoose, Grudhravit, Kaushikvit, Ulukavit, Ajapaya, Bhikshusanghati, Bastalom, Tarakshalom, Prasaha vit, Shwana vit, Shwana mutra, Mayur lom, Kunjar danta, Goshruna, Kukkutanda, Bhas vit, Ulukavit, Kaushik vit,	1

Table 4 Dhupan dravyas from mineral origin

Dravya name	Frequency of utilization
Sauviranjan, Hartal, Manahshila	1

Observation

In Ayurved many preventive methods for diseases are mentioned in Ayurveda like Dincharya & Rutucharya, -Daily and seasonal regimen, Homa, Havan, Rasayan, Rakshavidhan, Dhupan. Out of all the above, Dhupan should be especially carried out by healthcare workers to prevent infectious diseases in society. And Outdoor patient door, Indoor patient department, Panchakarma ward, operation theatre, Labour room, pediatric ward, and Ayurvedic Pharmacy should also be fumigated from time to time, to

Golom, Madhu, Kharamutra, Ajaloma, Meshalom, Meshashruna, Sarpanirmok are used in dhupa yog for 2 times. out of these dravyas Lom(hairs) contain Keratin, which is proved, antimicrobial agent. Madhu is Kashaya rasatmak and also has antimicrobial action, dravyas like Sarpanirmok have a research perspective to study its antimicrobial action.

Table 4- shows how many times dravyas originated from minerals. Sauviranjan, Hartal, Manahshila are repeated once in Dhupan you, which suggests that these dravyas are not repeated in Dhupan yog many times, as they may have some

possible adverse drug reaction. Hence these dravyas can be studied further for any adverse drug reaction.

- Plants used in Dhupan yog -most of them are having antimicrobial in action and having Katu, Tikta, and Kashaya Rasa which prevents the growth of microbes and kills certain microbes, like Siddharthaka, Sarshapa, Guggulu. Siddharthaka and Guggulu are used since the Vedic period for Rakshaviddhan.
- Most of the drugs are easily available in the market or homes like Nimba, Tulsi, Sarshapa Ghruta, and Guggulu.^[11]
- Most of the dravyas possess volatile oil or fixed oil or aroma, which creates a pleasant smell while Dhupan karma is going on.
- Some of these dravyas are having binding action and have Snigdha and pinch-hit guna and having binding action in Dhupan yog – Ghruta & resins like Guggulu, Sarjaras. Rapid combustion of cellulose in herbs occurs due to Ghruta and it also keeps the fire alight. Fatty acids volatilize easily. Along with above mentioned classical Dhupan yog.^{[10][11][12]}
- Most of these dravyas are Agni mahabhut Pradhan, and Dhupan karma is originated from Agni, these dravyas act more effectively.
- Some dravyas are of animal origin, which has probable action as antimicrobials or might be used to increase the fumes and as a vehicle for the main drug compound. In current time, if some dravyas are not possible to collect they could be replaced with cow dung or coal.
- Hair (including wool), nails, horns, scales, claws, shells, feathers, and beak contains Keratin as a key structural component. Keratins have intra- and intermolecular hydrogen bonds and large amounts of the sulfur-containing amino acid cysteine. Human hair is approximately 14% cysteine. The pungent smells of burning hair are due to the sulfur compounds. This sulfur might play a key role in the disinfection.

DISCUSSION

Since the Vedic period, the concept of Yagnya and Havan is closely linked with Hindu mythology. In the modern view, this can be compared with antimicrobials which control infections, by sanitizing the air. The mythological origin of and importance given to fumigations in classics reveals the scientific sense of ancient scholars regarding infections and their control.

Importance of Dhupan Karma in Ayurveda

According to Vedas definition of a Physician is -One who controls the infection and saves the patient from infectious diseases by using Rakshaviddhan karma or Dhupan karma. So much importance was given to Dhupan karma in the Vedic era as well as in Ayurved. Many kinds of research have been carried out on Agnihotras and Yagnas for their role in the sanitization of the atmosphere. Dhupan is an Ayurvedic preventive and therapeutic procedure in which fumes are produced from specific Ayurvedic drug formulations. The medicated fumes are inhaled/exposed by patients for therapeutic relief or externally as a cleanser to the environment. There is a major risk of spread of airborne infections with hospital-acquired infections and to control the spread of such infections, Dhupan is a safe practice and very

effective to control such infections. Dhupan is a classical Ayurvedic method of sterilization for Vranitagar, Sutikagar, Kumaragar, etc. with preventive as well as curative efficacy. Fumes can be facilitated to expose or inhale in various diseases such as cough, fever, coryza, piles, epilepsy, insanity, Asthma, bronchitis, and wounds.

The constituents of Dhupa are Ayurvedic herbs, animal products (like skin, hair, bones, horn, etc.), and various minerals, described in Ayurveda are efficient anti-microbial, anti-fungal, and antiviral action by nature. Since ancient times, sages used to clean the environment by Havanaadi rituals for homes and Yagnyadi rituals for cleansing the environment. However, because of the lacking scientific validation, these Dhupan practices are not famous, which brings attention to research opportunities and understand its safety, potency, and efficacy to control airborne infections. Dhupakalpas have advantages in dealing with airborne infection because of antioxidant and anti-microbial properties with safe, economical, and eco-friendly potential. Thus, it can be publicized in the prevention and control of COVID 19 like a pandemic situation as a supplementary method. Airborne infections are the commonest ones, develop respiratory disorders.

COVID 19 is one of the viral respiratory problems, created a pandemic with a high death rate. Covid 19 spreads from droplets, aerosol, and fomite by the affected patient's cough, nasal secretions, sneeze, sputum, or nasal discharge, and the environment gets easily contaminated.

Airborne infections can rapidly spread in masses through breathing and inhalation of microbes in an infectious environment. Therefore, this is required to sterile the area by disinfectant herbs or fumigation. There are many types of microbes present everywhere in the environment. Hence, it is a protocol to fumigate operation theatre before surgery to prevent hospital-acquired infections.

Recently, Dhupan is rarely used as a fumigation method. Therefore, re-publicize the advantages of Dhupan karma and evaluate the efficacy of different Dhupakalpas for fumigation purposes Rakshoghna (anti-microbial) with safe and quick action to prevent airborne infections. After observing the repeated use of certain drugs in a broad spectrum products could be prepared by the combination of those drugs. The anti-infective property of the fumes of those drugs should also be confirmed by enough researches.

Probable action of Dhupan dravyas

There are many common drugs such as Guggulu, Sarja, Arishtak/Neem, Rason, Haridra, Sarshapa, cow dung cakes, Ghrit, Hing, Vidanga, Yava, Aparajita, Vacha, Devdaru, Daruharidra, Bilva, Lakh, Atasi, Bramhi, Jatamansi, etc. Almost all the Dhupan dravya have an action of deodorant, antiseptic, analgesic, antipyretic, antitoxic, anti-inflammatory, Rakshoghna (anti-microbial), etc. by spreading pleasant aroma to fill in the air. The action of these drugs has been proven to the efficacy for improving health as well as prevention and control of diseases as they are anti-microbial by nature. Their classification has been done as per Samhita (Charak, Ashtang Hridaya, Sushrut, and Ashtang Sangraha), diseases, indications, and confirmed action with references.

CONCLUSION

- Dhupan is very helpful to prevent disease by disinfection of the desired place
- Universal Dhupan dravyas are Ghruta, Sarshapa, Vacha, Laksha, Hingu, Nimba, Guggulu, Vrihi, Tagara, Devadaru, and Akshara.
- Binding agent and aroma can be added for its pleasant smell along with effective action.
- Further study can be done to explore a broad spectrum of Dhupan Yoga & can be easily prepared and utilized as per need.
- Many of the materials from animal origin could be collected without hampering the rules and regulations of animal rights. But due to the rapid decline in the animal kingdom, some materials could not be collected easily. So in the present era, Jangam dravyas, certain materials like ghee, honey, goat milk, eggs of hen could be used due to easy availability, and the rest of the material can be exempted from the pharmaceutical preparation of fumigation.
- Some dravyas used for Dhupan you are not easily available in the present era. So, a broad spectrum Dhupan yog should be formed from these Dhupan dravyas, to make Dhupan yog easy to prepare and easy to practice. Universal Dhupan dravyas could be Ghruta, Siddharthaka, Sarshapa, Vacha, Laksha, Hingu, Nimba, Tulsi, Guggulu, Vrihi, Laja, Akshata as these drugs were repeatedly used in Dhoopkalpadhyaya. Along with these classical herbs, fragrance can be added for its pleasant smell along with effective action and Anudhudhupa dravyas can be added to avoid any adverse reactions like allergies.
- From Dhoopkalpadhya y of Kashyap Samhita selected has can be used to prevent the pandemic situation of Covid-19. These has can be used in Homa, Hava, Agnihotra, Rakshavidhan or Dhupan karma, community fumigation, these are -Kumar Dhupa, Agneya Dhupa, Maheshwar Dhupa, Rakshoghna Dhupa, Bhadrakar Dhupa, Dashanga Dhupa, Sarvarog Nashak Dhupa, Prati Dhupa, Mahoday Dhupa, Pratidhupa, Arista Dhupa, Sarva Rogaha Dhupa.

Research perspectives

- Standardisation of fumigants.
- Development of dhupan yantras.
- Analyzing chemical components.
- Developing dhupankalpa that can be used through maximum routes of administration.
- Toxicity studies should be done of Dhupan dravyas.
- Effect of Rakshavidhan or dhupan karma can be studied for the effect of Mantrochhar with it.

Conflict of Interest: NIL

Source of Support: NA

Acknowledgment: NIL

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How to cite this article:

Seema Nishant Parma Vd (2021) 'A Review On Dhoopkalpadhya Y -A Crucial Contribution of Kashyap Samhita As A Preventive Measure For Pandemic Situations', *International Journal of Current Advanced Research*, 10(08), pp. 24964-24969. DOI: <http://dx.doi.org/10.24327/ijcar.2021.4979.24969>
