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FUMIGATION IN AYURVEDA WITH SPECIAL REFERENCE TO KASHYAPA'S GANA DHUPA: A REVIEW OF ANTIMICROBIAL PERSPECTIVES

[1]*Vd. Shital R. Patil, [2]Vd. Dnyaneshwar Chavan

[1]PG Scholor, [2]Professor & HOD

Department of Shalyatantr Y.M.T. Ayurved Medical College & Hospital, Kharghar Mumbai.

MS Department of Shalyatantr Y.M.T. Ayurved Medical College & Hospital, Kharghar Mumbai.

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***Corresponding Author**

Vd. Shital R. Patil

PG Scholor, Department of Shalyatantr Y.M.T. Ayurved Medical College & Hospital, Kharghar Mumbai.

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INTRODUCTION

Infection of surgical sites, historically have been one among the most important hurdles. It was a leading cause of morbidity and mortality. Before the introduction of antiseptic principles into surgical practice, even minor wounds or open fractures, very often led to sepsis, gangrene, amputations or death. It was only in the 1860s that Joseph Lister (1827-1912), introduced the use of carbolic acid for sterilization of wounds, surgical instruments, and operative field as an antiseptic measure. This minor addition into everyday surgical practice had drastically reduced postoperative mortality and later became the groundwork for modern antiseptic surgery. In 19th century Europe, an open fracture almost always resulted in amputation or death and this contribution of Joseph Lister earned him the title of "Father of antiseptic surgery".[2] Fascinatingly, even before the time of Joseph Lister, systematic approaches forinfection prevention has been described and practiced in Ayurveda - the ancient Indian system of medicine. The classical texts emphasize on Rakshoghna karma (protective measures) millennia before the conception of Germ theory in the western science.3 Among them, *Dhupana* (Fumigation) was considered as a means to purify, environment, prevention contamination and protect vulnerable populations such as infants, pregnant women, post surgical patients etc.[4] The *Sushruta Samhita* (circa 600 BCE), regarded as one of the foundational surgical treatises of the world,

prescribes fumigation of the *Shalya-shala* (operation theatre) and instruments before surgery, as well as wards and houses, to ensure asepsis. Similarly, the Charaka Samhita and Ashtanga Hridaya mention fumigation for protection against *Krimi* (microorganisms, parasites) and invisible pathogenic entities.[5] *Acharya Kashyapa* (6th century BCE), in his Kashyapa Samhita, elaborated specific formulations for fumigation to safeguard newborns, mothers, and households, recognizing its importance in infection control.[6] One such notable formulation is *Kashyapa's Gana Dhupa*, consisting of *Ghrita* (*ghee*), Madhu (honey), *Akshata* (rice grains), *Jatipushpa* (clove), *Siddharthaka* (mustard seeds), and *Vacha* (Acorus calamus). This combination was advocated for its *Rakshoghna* (protective), *Krimighna* (antimicrobial), and *Vishaghna* (antitoxic) properties, and was widely employed in neonatal care and ward disinfection.[7]

Thus, while Western medicine recognized antisepsis less than two centuries ago, *Ayurvedahad* already systematized fumigation and aseptic practices more than 2,500 years ago. In the present era of antimicrobial resistance, hospital-acquired infections, and the search for eco-friendly alternatives, revisiting such traditional methods holds immense relevance. Thisreview therefore explores fumigation therapy in Ayurveda with special reference to Kashyapa's Gana Dhupa, highlighting its classical rationale, pharmacological basis, and antimicrobial potential in the light of modern scientific evidence.

2. *Dhupana* in *Ayurvedic* Literature

2.1 Concept of *Rakshoghna* Karma

Ayurveda emphasizes not only the treatment of disease but also its prevention. *Rakshoghna Karma* refers to protective measures undertaken to safeguard individuals, particularly the vulnerable—such as pregnant women, newborns, surgical patients, and community dwellers—from invisible disease-causing entities (*Bhuta, Krimi*). Among these measures, *Dhupana* (fumigation therapy) is repeatedly mentioned in Charaka *Samhita, Sushruta Samhita, Ashtanga Hridaya, and Kashyapa Samhita. Dhupana* was performed to purify rooms, delivery wards, surgical theatres (*Shalya-shala*), and even instruments.

2.2 Dhupana in Surgical Practice (Operation Theatre Fumigation)

The *Sushruta Samhita (Sharira Sthana 5/12)* specifically describes the preparation of an aseptic environment for surgery. The *Shalya-shala* (operation theatre) was to be constructed in a clean locality, well-ventilated, and regularly fumigated with selected medicinal drugs such as Guggulu (Commiphora mukul), *Sarshapa* (mustard seeds), *Vacha* (Acorus calamus),

and *Nimba* (Azadirachta indica)[8] This ensured that pathogenic organisms (*Krimi, Kitanu*) and toxic entities (*Visha*) were eliminated. *Sushruta* also prescribed fumigation of surgical instruments after cleaning, a practice strikingly parallel tomodern sterilization techniques.[9]

Similarly, the *Charaka Samhita (Sutra Sthana 5/15*) mentions fumigation for purification of dwellings and patient.10 Similarly *Acharya Vagbhata (Ashtanga Hridaya, Sutra 3/44)* reiterates the importance of fumigating houses and therapeutic spaces with antimicrobial substances like *Agaru, Vacha,* and *Haridra.*[11]

2.3 Kashyapa's Emphasis on Dhupana

Among *Ayurvedic* classics, Kashyapa Samhita gives maximum emphasis to fumigation in neonatal and maternal care. *Acharya Kashyapa* prescribes Gana Dhupa (*Ghrita, Madhu, Akshata, Jatipushpa, Vacha, Siddharthaka*) for fumigating the delivery room, cradle, and neonatal wards, thereby preventing infections and safeguarding newborn.[12] This illustrates that fumigation was not only surgical but also obstetric and pediatric in application, showing *Ayurveda*'s holistic approach to infection control.[13]

3. Drug Review of Kashyapa's Gana Dhupa

3.1 *Ghrita (Ghee)*

Classical Role: Acts as a *Yogavahi* (carrier) for other drugs, sustains burning, and spreads medicinal smoke evenly.

Modern Perspective: Rich in saturated fats; smoke of ghee may aid volatilization of active phytochemicals from other drugs.

3.2 *Madhu* (Honey)

Classical Role: *Krimighna, Vishaghna*, used for wound healing and purification.

Modern Evidence: Antimicrobial activity against Staphylococcus aureus, Pseudomonas aeruginosa, and fungi; due to hydrogen peroxide, flavonoids, and phenolic acid.

3.3 *Akshata* (Rice grains)

Classical Role: Mangala dravya used in rituals; serves as a medium for steady smoke release.

Modern Evidence: Rice husk smoke contains phenols and organic acids with mild antimicrobial actiAksha.

3.4 *Jatipushpa* (Clove – Syzygium aromaticum)

Classical Role: Used in *Rakshoghna Karma and Krimighna Yoga.*

Modern Evidence: Contains eugenol with strong antibacterial, antifungal, and anesthetic activity. Clove smoke has documented activity against airborne microbes.

3.5 *Siddharthaka* (Mustard seeds – Brassica juncea)

Classical Role: Used in fumigation for purification of wards, delivery rooms, and instruments.

Modern Evidence: Mustard essential oils contain isothiocyanates with proven antimicrobial and insecticidal properties.

3.6 *Vacha* (Sweet flag – Acorus calamus)

Classical Role: Mentioned as *Krimighna* and *Rakshoghna*, especially in fumigation.

Modern Evidence: Volatile oil rich in β-asarone, with antimicrobial, antifungal, and insect-repellent actions.

4. *Dhupana* and Modern Sterilization – A Parallel

In modern hospitals, operation theatre sterilization is achieved by methods like formaldehyde fumigation, hydrogen peroxide vapor, chlorine dioxide, and UV radiation. While effective, these methods often carry drawbacks such as toxicity, respiratory irritation, and environmental hazarun.[14]

Ayurvedic fumigation, on the other hand, employed plant-based, eco-friendly substances that not only reduced microbial load but also had psychological and aromatic benefits. Recent studies on *Ayurvedic* fumigation with agents like *Guggulu*, Neem, and *Haridra* have shown significant reductions in airborne bacteria and fungi.15 However, *Kashyapa's Gana Dhupa* remains underexplored in experimental microbiological studies, highlighting a major research gap.

DISCUSSION

The practice of **Dhupana** in *Ayurveda* reveals remarkable foresight in understanding the relationship between environment and infection. While Western medicine only acknowledged antisepsis after the pioneering work of Joseph Lister in the 19th century, *Ayurvedic* texts

written over two millennia earlier systematically advocated fumigation for protection of surgical theatres, wards, instruments, delivery rooms, and households.

The parallels with modern sterilization are striking. Sushruta's prescription of fumigating the **Shalya-shala** (operation theatre) with substances like **Vacha**, **Sarshapa**, and **Nimba** closely mirrors today's fumigation and disinfection procedures used before surgery. The use of fumigation for instruments demonstrates an intuitive understanding of asepsis, long before the discovery of microbes.

From a pharmacological perspective, the ingredients of Kashyapa's Gana Dhupa possess documented antimicrobial properties

* Clove (Syzygium aromaticum): rich in eugenol, effective against Gram-positive and Gram-negative bacteria.
* Mustard (Brassica juncea): contains isothiocyanates, potent natural antimicrobials.
* *Vacha* (Acorus calamus): essential oils with antifungal and insecticidal activity.
* Honey and *Ghee*: synergistic agents aiding smoke generation while contributing antimicrobial activity.
* Rice grains: act as a base medium, providing sustained smoke release.

When combusted together, these substances likely generate a complex aerosol of volatile phytochemicals with potential bactericidal, fungicidal, and insect-repellent properties. Unlike formaldehyde or chlorine, which carry risks of mucosal irritation and toxicity, Ayurvedic fumigation offers an eco-friendly, biocompatible alternative that could be especially useful in neonatal care units, rural hospitals, and community healthcare settings.

However, despite the strong theoretical and pharmacological basis, scientific validation of *Kashyapa's Gana Dhupa* is limited. Most available studies focus on individual plant components or alternative fumigation formulations (e.g., **Neem, Haridra, Guggulu**). Very few experimental trials have evaluated the combined antimicrobial efficacy of this unique Kashyapian formulation. Furthermore, standardization of the fumigation protocol—dosage,duration, combustion method, area coverage—is largely unexplored.

Thus, while the Ayurvedic rationale is robust, and modern evidence on ingredients is promising, bridging this gap requires well-designed experimental studies. Laboratory-based

microbial culture trials, followed by controlled hospital-based studies, are essential to establish its real-world applicability.

6. Conclusion & Future Scope

The review highlights that Ayurveda had evolved fumigation-based aseptic protocols more than 2,500 years ago, particularly for operation theatres, wards, and maternal-neonatal care units. *Acharya Kashyapa's Gana Dhupa*, comprising *ghee*, honey, rice, clove, mustard, and sweet flag, stands out as a classical formulation with immense potential for infection control.

Modern pharmacological studies confirm that each component of this formulation possesses antimicrobial activity. However, there is a significant gap in evaluating their synergistic efficacy when used as fumigation. With the current global challenge of antimicrobial resistance and nosocomial infections, revisiting such traditional eco-friendly approaches is not only scientifically relevant but also socially urgent.

Future research should focus on

* Standardization of Gana Dhupa fumigation protocols (dosage, time, area of coverage).
* Microbiological validation through culture and sensitivity tests on common hospital pathogens (e.g., *Staphylococcus aureus, E. coli, Pseudomonas, Candida*).
* Comparative studies between Ayurvedic fumigation and modern OT sterilization methodsto evaluate efficacy and safety.
* Exploration of its role in resource-limited settings, neonatal wards, and outpatient clinics as a safe alternative to chemical disinfectants.

If validated experimentally, *Kashyapa's Gana Dhupa* could offer a sustainable, non-toxic, andculturally relevant method of disinfection, reviving an ancient practice for modern healthcare challenges.

REFERENCES

1. Lister J. On the antiseptic principle in the practice of surgery. Br Med J., 1867; 2(351): 246–248.
2. Godlee R. Lord Lister. London: Macmillan, 1917.
3. Sharma PV. History of Medicine in India. New Delhi: Indian National Science Academy; 1992.

4. Sushruta Samhita. Edited by Vaidya Jadavji Trikamji Acharya. Varanasi: Chaukhambha Surbharati Prakashan, 2017; Sharira Sthana 5/12.
5. Charaka Samhita. Edited by Vaidya Jadavji Trikamji Acharya. Varanasi: Chaukhambha Surbharati Prakashan, 2015; Sutra Sthana 5/15.
6. Kashyapa Samhita. Edited by P.V. Tewari. Varanasi: Chaukhambha Vishvabharati, 2016.
7. Tewari PV. Kashyapa Samhita with English Translation and Commentary. Varanasi: Chaukhambha Vishvabharati, 2016.
8. Sushruta Samhita. Sutra Sthana. Varanasi: Chaukhambha Surbharati Prakashan; 2017.
9. Bhishagratna KK. An English Translation of the Sushruta Samhita. Varanasi: Chowkhamba Sanskrit Series Office, 2006.
10. Charaka Samhita. Sutra Sthana. Varanasi: Chaukhambha Surbharati Prakashan, 2015.
11. Ashtanga Hridaya. Edited by K.R. Srikantha Murthy. Varanasi: Chaukhambha Krishnadas Academy; 2014. Sutra Sthana 3/44.
12. Sharma H, Chandola HM. Kashyapa Samhita: A critical appraisal. Anc Sci Life, 2011; 30(4): 132–135.
13. Dash B, Sharma BK. Kashyapa Samhita. Varanasi: Chaukhambha Sanskrit Series, 2002.
14. Rutala WA, Weber DJ. Disinfection and sterilization in health care facilities. Clin Microbiol Rev., 2004; 17(2): 365–380.
15. Nautiyal CS, Chauhan PS, Nene YL. Medicinal smoke reduces airborne bacteria. JEthnopharmacol., 2007; 114(3): 446–451.