



RESEARCH ARTICLE

A CRITICAL REVIEW ON *DHOOMUPAHAT*-UNDERSTANDING SMOKE INHALATION INJURY

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ARTICLE INFO

Article History:

Received 14th January, 2026
Received in revised form
24th February, 2026
Accepted 25th March, 2026
Published online 30th April, 2026

Keywords:

Dhoomupahat, *Mithya*
Dhoomapana, Acute Respiratory
Distress, Smoke Inhalation Injury,
PranavahaSrotas, Asphyxiation

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ABSTRACT

Dhoomupahat is a condition described in classical *Ayurvedic* literature, refers to pathological effects arising from exposure to inhaled smoke (*Dhooma*), particularly when used improperly or encountered in toxic environments. In the current era of increasing air pollution, industrial hazards, and fire-related injuries, this concept holds significant clinical relevance. According to different *Ayurvedic* texts, such as *Charaka Samhita*, *Sushruta Samhita*, and *AshtangaHridaya*, *Acharyas* have elaborately described the etiological factors, clinical manifestations, and complications associated with improper inhalation of smoke. Especially *Acharya Charaka* and *Acharya Vagbhatta* emphasizes on the role of *Mithya Dhoomapana* and its systemic effects, whereas *AcharyaSushruta* provides a more clinically oriented description, highlighting acute respiratory compromise and features resembling asphyxiation. The pathogenesis of *Dhoomupahat* primarily involves vitiation of *Pranavaha Srotas*, leading to obstruction, impaired gaseous exchange, and systemic hypoxia. These descriptions show strong parallels with modern concepts of smoke inhalation injury and acute respiratory distress syndrome (ARDS), including airway inflammation, alveolar damage, and oxygen deprivation.

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Citation: Dr. Megha Yadav and Dr. Ajay kumar Gupta, 2026. "A Critical review on *dhoomupahat*-understanding smoke inhalation injury?". *International Journal of Current Research*, 18, (04), 37019-37021.

INTRODUCTION

Dhoomupahat is a classical *Ayurvedic* condition describing the pathological impact of inhaled smoke (*Dhooma*) on the human body, particularly affecting the *PranavahaSrotas*. The term *Dhoomupahat* is derived from two components: *Dhooma* (smoke) and *Upahata* (afflicted or injured). In *Ayurvedic* literature, *Dhooma* is not only pathological rather, it is also described as therapeutic depending on its method of use. *Dhoomapana*, when administered properly, is indicated in various disorders of the head and neck. However, improper administration (*Mithya Yoga*), excessive exposure, or inhalation of toxic smoke leads to pathological manifestations affecting the respiratory system and systemic physiology.¹ *Acharyas* have emphasized that inhalation of toxic or excessive smoke can disturb the normal physiological functioning of respiratory pathways, resulting in symptoms such as *Shwasa* (dyspnoea), *Kasa* (cough), *Murchha* (loss of consciousness), and *Chakshu Daha-raga* (burning sensation and redness in eyes).² Smoke contains various toxic gases such as carbon dioxide (CO₂), carbon monoxide (CO), sulphurous fumes, ammonia, hydrogen sulfide, etc. Upon inhalation, these gases fill the respiratory tract and lungs, preventing fresh air from entering the system. Consequently, the blood remains deoxygenated. The absorption of these gases into the bloodstream adversely affects the respiratory center, leading to three progressive clinical stages *Swasakrichrata* (dyspnoea), *Aakshepa* (convulsions), and ultimately *Mrityu* (death). These descriptions indicate that *Dhoomupahat* is not merely a localized condition but involves systemic derangement due to impaired respiration and oxygenation. In the present era, rapid industrialization, urbanization, and environmental pollution have

significantly increased human exposure to smoke and harmful gases. Additionally, fire-related accidents, occupational hazards further contribute to reduce oxygen supply leading to condition of asphyxiation. Allopathic medicine recognizes smoke inhalation as a major cause of acute respiratory distress, often progressing to life-threatening conditions such as asphyxiation and acute respiratory distress syndrome (ARDS). The pathophysiological mechanisms involve thermal injury, chemical irritation, airway inflammation, alveolar damage and impaired gaseous exchange leading to hypoxia. These features show a remarkable resemblance to the classical descriptions of *Dhoomupahat*, suggesting a strong conceptual correlation between *Ayurveda* and contemporary science.³

Classical Review of *Dhoomupahat*

Acharya Charaka: In *Charaka Samhita*, *Dhoomapana* is elaborately described under daily regimen and therapeutic procedures, with clear emphasis on its proper and improper usage. Although the term *Dhoomupahat* is not clearly mentioned, the complications arising from *MithyaDhoomapana* closely resemble its clinical picture. *AcharyaCharaka* explains that excessive or untimely inhalation of smoke leads to vitiation of *Vata* and *Kapha*, resulting in symptoms such as *Shwasa* (dyspnoea), *Kasa* (cough), *Bhrama* (giddiness), *Mookta* (unable to speak) and *Kantha ura-daha* (burning sensation in chest and throat). These manifestations indicate functional impairment of *PranavahaSrotas*. Thus, *Acharya Charaka's* contribution is primarily preventive and etiological, focusing on how improper practices can initiate respiratory pathology.⁴

Acharya Sushruta: *Sushruta Samhita* provides a more clinically oriented and practical description relevant to *Shalya Tantra*. The concept of asphyxiation can be understood under *Agantuja Hetu* (external causes), where exposure to toxic smoke is considered a causative factor for acute disorders. *Acharya Sushruta* describes symptoms such as⁵

- *Swasa Krichhrata* (severe respiratory distress)
- *Abhikshanam Kshauti* (frequent and continuous sneezing)
- *Adhmana* (abdominal distension)
- *Chakshu Paridaha- Raga* (Burning sensation with redness in the eyes)
- *Sadhumakam Nihswas* (Hot, irritant smoky exhalation)
- *Gandha Agyaan* (Loss of sense of smell)
- *Rasaan Sarvaan Shruti Cha Uphante* (Loss or impairment of all tastes and hearing)
- *Trishna* (increased thirst)
- *Daha* (burning and irritation in chest and throat)
- *Jwar* (fever)
- *Murchha* (syncope)

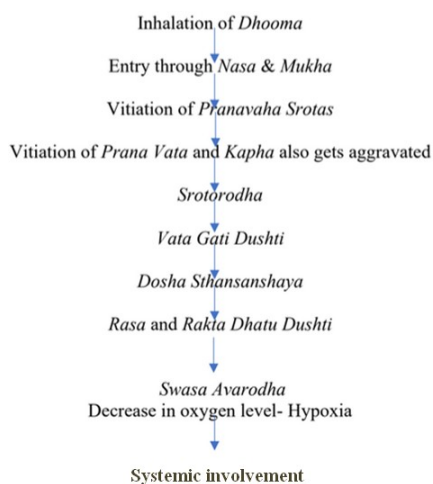
These features strongly resemble acute asphyxiation and emergency respiratory conditions like ARDS.

Acharya Vagbhata

In *Ashtanga Hridaya*, *Acharya Vagbhata* provides a systematic description of *Dhoomapana Vidhi*, including indications, contraindications, and complications. He highlights that improper dosage, timing, or selection of *Dravyas* can lead to adverse effects such as *Ura Shoola* (chest pain), *Rakta-Pitta* (bleeding disorders), *Andhaya* (blindness), *Badharya* (hearing loss), *Murchha* (faint), *Moha* (confusion).⁶

Kashyapa Samhita: *Kashyapa Samhita* provides indirect insights into inhalational pathology, particularly in vulnerable populations such as children. It highlights the sensitivity of *Pranavaha Srotas* to environmental factors.⁷

Samprapti (Pathogenesis of Dhoomupahat)



ASPHYXIATION (SMOKE INHALATIONAL INJURY)

DEFINITION

Asphyxiation refers to a state of deficient supply of oxygen to the body that arises from abnormal breathing. This may be seen in conditions of trauma, airway obstruction, inhalational injuries or neonatal emergencies. Asphyxiation is characterized by an impairment of gas exchange, leading to varying degrees of hypoxia (low oxygen), hypercarbia (high carbon dioxide), and acidosis.⁸ Inhalational burns are devastating, increasing mortality by 20% independent of other factors.⁹ The inhalational injury is caused by three main factors—thermal injury, chemical irritation from smoke, and systemic toxicity due to gases like carbon monoxide and hydrogen cyanide. Carbon

monoxide has a very high affinity for hemoglobin (about 200–240 times more than oxygen), leading to formation of carboxyhemoglobin and resultant hypoxia. Hydrogen cyanide further contributes by causing tissue hypoxia and metabolic acidosis.¹⁰ The airway is affected by inflammation, leading to laryngeal oedema, laryngospasm, bronchial oedema, and bronchospasm. Smoke inhalation damages the respiratory epithelium, causing loss of ciliary function and accumulation of secretions. This results in formation of bronchial casts and airway obstruction.

RISK FACTORS¹¹

- Burns sustained in closed environment
- Explosions
- Facial burns
- Prolonged exposure to flames

CLINICAL FEATURES¹²

- Facial burns with singeing of facial and nose hair
- Inflamed and oedematous oropharyngeal mucosa
- Hoarseness and respiratory stridor
- Laboured breathing
- Mouth and nostrils filled with carbonaceous material
- ARDS (acute respiratory distress syndrome)

COMPLICATIONS¹³

- ARDS
- Pneumonia
- Pulmonary embolism
- Pulmonary oedema
- Pneumothorax

MANAGEMENT OF ASPHYXIATION¹⁴

- Removal from exposure (smoke-free environment)
- Ensure adequate ventilation and oxygen supply
- Maintain airway patency
- Intubation at earliest as possible
- Tracheostomy if intubation is not possible due to airway odema
- Hyperbaric oxygen in CO poisoning
- Maintain ABGs (arterial blood gas) and blood CO levels
- Symptomatic treatment, antibiotics, fluid therapy
- To remove Bronchial cast -
- Bronchoscopy
- IV heparin or heparin nebulization
- N- acetylcysteine nebulization 20%
- Hypertonic saline inhalation
- Bronchodilators- albuterol

MANAGEMENT OF DHOOMUPAHAT

According to Acharya Sushruta¹⁵

The management of *Dhoomupahat* focuses on four basic principle

- **VAMANA**- First, to induce *Vamana*, the patient should be given a mixture of *Ghrta* (clarified butter), *Ikshu Rasa* (Sugarcane juice), *Mridwika* (raisins), *Dugdha* (Milk), Sugar-water (Sherbet), or substances with *Madhur* (Sweet) and *Amla* (Sour) tastes.
- **KAVAL-GRAHA**- Gargling with decoctions of substances that are predominantly *Madhur* (sweet), *lavana* (salty), *Amla* (sour), *katu* (pungent) helps the person perceive sensory objects (sound, touch, smell, etc.) clearly again and purifies the mind.
- **SHIROVIRECHANA**- After *Vamana*, *Shirovirechana* (nasal therapy) should be administered. This improves the patient's vision and cleanses the head and throat.

- **POST-TREATMENT DIET-** Following these procedures, the patient should be given a diet that does not cause a burning sensation and is *Laghu* (Light-diet) and *Snigdha*.

According to *Acharya Charaka*¹⁶

Acharya Charaka mentioned the management of *Dhoomapana* complications which focuses on treating the vitiation of *Vata*, *Rakta*, and *Shleshma*. The treatment mainly involves the administration of medicated *Ghrita* in the form of *Pana*, *Nasya*, *Anjana*, and *Tarpana*. Treatment selection is done by *Dosha* predominance, *SheetalGhrita* is indicated for *Vata-Pitta* disturbances, while *RukshaGhrita* is indicated for *Kapha-Pitta* involvement to effectively neutralize localized toxicity.

According to *Acharya Vagbhata*¹⁷: *Acharya Vagbhata* insight is to use *Sheeta* (cooling) therapies. His approach integrates both preventive and pathological aspects, emphasizing dose-dependent toxicity and the importance of proper administration.

DISCUSSION

The integrative analysis of classical *Ayurvedic* texts and modern medical science indicates that *Dhoomupahat* is a clinically significant condition with direct relevance to asphyxiation. *Acharya Charaka* and *Vagbhata* primarily emphasize preventive and etiological aspects through *Mithya Dhoomapana*, whereas *Acharya Sushruta* provides a more clinically oriented description resembling asphyxiation. The concept of *Pranavaha Srotas Dushti* explains respiratory impairment through *Srotorodha* and *Vata-Kapha* imbalance, which can be correlated with modern mechanisms such as airway inflammation, bronchoconstriction, alveolar damage, and hypoxemia. This highlights that *Dhoomupahat* closely parallels conditions like asphyxiation (smoke inhalation injury) and ARDS. From the perspective of *Shalya Chikitsak*, *Ashu-kriya* for the early recognition and rapid management are crucial. An integrative approach combining *Vata-Kapha Shamana* along with airway and oxygen support can improve clinical outcomes and the applicability of *Ayurvedic* principles in emergency care.

CONCLUSION

Dhoomupahat represents a classical *Ayurvedic* description of smoke-induced respiratory pathology with remarkable similarity to modern concepts of smoke inhalation injury (asphyxiation) and ARDS. In today's era, rapid industrial growth, city expansion, rising pollution and fire accidents have greatly increased people's exposure to smoke and harmful toxins. The concept of *Dhoomupahat* is remarkably similar to asphyxiation (Smoke Inhalation Injury) and ARDS. Combining the ideas of *Acharyas* guides us for both preventing and treating these serious injuries. This combined approach not only proves that ancient *Ayurvedic* wisdom is accurate but also makes it incredibly useful for application in present day clinical practice, particularly in emergency and surgical field.

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