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Review Article

# Kāśāhara Mahākaṣāya: An Exploratory Review of Its Constituents, Pharmacodynamic Attributes and Experimental Evidences with Special Reference to Respiratory Disorders

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## Abstract

**Introduction:** Respiratory disorders described under Śvāsa and Kāsa in Ayurveda are characterized by airway inflammation, bronchoconstriction, mucus hypersecretion, and recurrent infections. Kāśāhara Mahākaṣāya, described by Ācārya Caraka, is a classical group of ten herbs indicated for cough-dominant and Kapha–Vāta predominant respiratory conditions. Despite its extensive traditional use, scientific appraisal of its constituents and pharmacological relevance remains limited. The present review aims to analyze the classical Ayurvedic attributes, phytochemical constituents, and contemporary evidence of the drugs comprising Kāśāhara Mahākaṣāya, with special reference to respiratory disorders.

**Methods:** Classical Ayurvedic texts including the Caraka Saṃhitā and various Nighaṇṭus were reviewed to elucidate the pharmacodynamic properties (Rasapañcaka, Doṣaghnatā, and Rogaghnatā) of the constituent drugs. For contemporary evidence, scientific databases such as PubMed and Google Scholar were searched for experimental and clinical studies focusing on anti-inflammatory, antitussive, bronchodilatory, anti-asthmatic, antioxidant, immunomodulatory, and antimicrobial activities relevant to airway inflammation.

**Results:** The drugs of Kāśāhara Mahākaṣāya exhibit complementary pharmacological actions including suppression of pro-inflammatory cytokines, mast cell stabilization, bronchodilation, modulation of Th2/Th17 immune responses, enhancement of antioxidant defense mechanisms, antitussive effects, and antimicrobial activity. These actions correlate with Ayurvedic descriptions of Kāśāhara, Śvāsahara, Śothahara, and Rasāyana properties. Experimental and limited clinical evidence supports their efficacy in attenuating airway inflammation, bronchospasm, oxidative stress, and allergic responses.

**Conclusion:** Kāśāhara Mahākaṣāya represents a rational, multi-targeted therapeutic approach for respiratory disorders, particularly bronchial asthma and allergic airway diseases. However, further well-designed clinical trials employing standardized formulations are warranted to establish its efficacy and role in integrative respiratory care.

**Keywords:** Kāśāhara Mahākaṣāya, bronchial asthma, anti-inflammatory, immunomodulatory, Ayurveda, respiratory disorders.

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## Introduction

In Ayurveda, the majority of respiratory disorders are broadly categorized under Śvāsa, which encompasses a spectrum of conditions characterized by Kāsa (cough), Śvāsakṛcchratā (dyspnoea), and Pīnasa (allergic rhinitis) as the predominant clinical manifestations. Among these, Kāsa is considered the most significant symptom, as it profoundly affects a patient's daily activities, sleep, and overall quality of life.

Ayurveda possesses an extensive repository of medicinal plants known for their efficacy in the prevention and management of respiratory ailments. In this context, Ācārya Caraka has delineated fifty Mahākaṣāya, each comprising ten herbs grouped according to specific therapeutic indications. These Carakokta Mahākaṣāya are disease-oriented and have been systematically formulated to provide clear clinical guidance to physicians.

Among these groups, the Kāśāhara Mahākaṣāya can be applied to the management of respiratory disorders where cough is the dominant symptom. Several Ayurvedic formulations have been described for respiratory care, and Kāśāhara Mahākaṣāya stands out as one of the principal formulations referenced in the Caraka Saṃhitā (Sū. 4/26) for relieving Kapha–Vāta dominant respiratory conditions.

Kāśāhara Mahākaṣāya comprises ten herbal drugs—Drākṣā (Vitis vinifera Linn.), Abhayā (Terminalia chebula Retz.), Āmalakī (Phyllanthus emblica L.), Pippalī (Piper longum Linn.), Duralabhā (Fagonia cretica Linn.), Śṛṅgī (Pistacia chinensis Bunge.), Kaṇṭakārī (Solanum virginianum L.), Vṛścīrā (Boerhaavia erecta), Punarnavā (Boerhaavia diffusa L.), and Tāmalakī (Phyllanthus niruri)—each endowed with Kāsa–Śvāsa-hara, Śothahara, Kapha–Vāta-śāmaka, and Rasāyana properties.

The aim of the present review is to explore the potential of Kāśāhara Mahākaṣāya in various respiratory disorders.

## Materials And Methods

Classical literature including the Caraka Saṃhitā and other Saṃhitās such as Bhāvaprakāśa Nighaṇṭu, Rāja Nighaṇṭu, and Dhanvantari Nighaṇṭu were reviewed to extract information related to the ten ingredients of Kāśāhara Mahākaṣāya and to understand their pharmacodynamic profile, indications, and mode of action. For the contemporary review, databases such as PubMed and Google Scholar were searched using different keywords, including the scientific names of the drugs and combinations such as respiratory disorder, anti-inflammatory,

antitussive, bronchodilatory, antioxidant, anti-asthmatic, immunomodulatory, and antimicrobial activities. Mainly, those research articles in which the effects of the drugs on airway inflammation were studied were included in the analysis.

## Observations

### Rasapañcaka

The Rasapañcaka analysis of Kāśāhara Mahākaṣāya indicates that ingredients such as Drākṣā, Punarnavā, Abhayā, Duralabhā, Āmalakī, and Tāmalakī predominantly possess Madhura, Tikta, and Kaṣāya rasa, whereas Pippalī, Śṛṅgī, and Kaṇṭakārī chiefly exhibit Kaṭu and Tikta rasa.

The Guṇa profile reflects the presence of Laghu, Tīkṣṇa, Rūkṣa, and Viśada qualities in Abhayā, Pippalī, Śṛṅgī, and Kaṇṭakārī, while Drākṣā contributes Snigdha guṇa and Āmalakī shows Guru and Śīta guṇa.

The formulation comprises a balanced combination of Uṣṇa vīrya herbs—Pippalī, Śṛṅgī, Kaṇṭakārī, Punarnavā, and Abhayā—and Śīta vīrya herbs including Drākṣā, Āmalakī, Duralabhā, and Tāmalakī.

The majority of ingredients exhibit Madhura vipāka, while Śṛṅgī, Kaṇṭakārī, and Punarnavā possess Kaṭu vipāka. With regard to Doṣaghnatā, most ingredients function as Kapha–Vātahara or Tridoṣahara.

The Rogaghnatā profile highlights therapeutic indications for Kāsa, Śvāsa, Hikkā, Pīnasa, and Ūrdhva vāta across the formulation, with additional indications such as Yakṣmā, Kṣaya, and Pārśva-pīḍā noted for Śṛṅgī, Kaṇṭakārī, and Tāmalakī.

### Drākṣā (Vitis vinifera Linn.)

Drākṣā (Vitis vinifera L.) is categorized under Phala varga dravya in Ayurveda and is traditionally acclaimed as Phalottama, denoting its superior nutritive and therapeutic value. Phytochemical investigations reveal that Drākṣā is a rich repository of bioactive constituents including simple sugars, organic acids, amino acids, peptides, proteins, vitamins, carotenoids, and a broad spectrum of phenolic compounds such as flavonoids, anthocyanins, proanthocyanidins, catechins, stilbenes, and phenolic acids, which collectively contribute to its pharmacological profile. [1]

Experimental studies attribute anti-inflammatory, immunomodulatory, antioxidant, neuroprotective, and antiapoptotic actions to these constituents. [2,3] In airway inflammatory disorders, grape seed proanthocyanidin extract has been shown to attenuate airway hyperresponsiveness and eosinophilic inflammation by suppressing Th2 cytokines and inducible nitric oxide

synthase expression while enhancing Interferon-γ levels. [4] Gallic acid–rich extracts have demonstrated anti-asthmatic activity through inhibition of histamine release and pro-inflammatory cytokines. [5] Drākṣā also exhibits antimicrobial activity against respiratory pathogens with additional inhibition of bacterial biofilm formation. [6,7]

**Abhayā (Terminalia chebula Retz.)**

Abhayā is a well-established Rasāyana drug in Ayurveda, extensively described for its Dīpana, Pācana, Anulomana, and Vāta–Kapha-hara properties. Classical texts indicate its use in Śvāsa, Kāsa, Pratiśyāya, and chronic inflammatory conditions. Phytochemical profiling reveals hydrolysable tannins, flavonoids, organic acids, and micronutrients contributing to its broad pharmacodynamic profile. [8,9]

Experimental studies demonstrate significant anti-inflammatory, antimicrobial, antioxidant, and immunomodulatory activities. Chebulagic acid has shown protective effects in experimental lung injury models by reducing pulmonary edema and neutrophilic inflammation. [10,11] Antitussive activity comparable to standard agents has also been demonstrated without neurotoxicity. [12]

**Āmalakī (Emblica officinalis Gaertn.)**

Āmalakī is a Rasāyana dravya described for its Vayasthāpana, Balya, and Tridoṣaghna actions with predominance of Pitta-śamana. Classical texts advocate its use in Kāsa, Śvāsa, and Rājayakṣmā. It is one of the richest sources of stabilized vitamin C along with tannoid principles such as emblicanin A and B, contributing to potent antioxidant and immunomodulatory effects. [13] Antitussive, [14] anti-inflammatory, and cardio-respiratory protective effects [15] have been validated experimentally and clinically. Studies demonstrate suppression of cough reflex, enhancement of antioxidant defenses, and improvement in immune parameters including natural killer cell activity. [16]

**Duralabhā (Fagonia cretica L.)**

Duralabhā is described for its Raktāśodhaka, Śothahara, Jvaraghna, and Vraṇaropaṇa properties. Phytochemical studies reveal sterols, triterpenoids, sapogenins, flavonoids, and fatty acids. [17] Experimental studies confirm antimicrobial, anti-inflammatory, antioxidant, and antipyretic activities, supporting its traditional role in respiratory and infective conditions. [17]

**Śṛṅgī (Pistacia integerrima)**

Śṛṅgī, commonly known as Karkaṭaśṛṅgī, is extensively indicated in Śvāsa, Kāsa, and Hikkā. Phytochemical investigations reveal triterpenoids and

volatile constituents responsible for bronchodilatory, anti-inflammatory, and immunomodulatory actions. [18]

Experimental studies demonstrate mast cell stabilization, antihistaminic activity, [19] tracheal smooth muscle relaxation, [20] and suppression of Th2 cytokines, [21] validating its role in allergic asthma and airway inflammation. [22]

**Kaṇṭakārī (Solanum virginianum L.)**

Kaṇṭakārī is a principal drug of Daśamūla, described for Kapha–Vāta-śamana, Kāsa-hara, and Śvāsa-hara actions. Phytochemicals include steroidal alkaloids, sterols, sapogenins, and volatile compounds contributing to bronchodilatory and anti-inflammatory effects. [23]

Experimental and clinical studies demonstrate antitussive, [24] bronchodilatory, [25] mast cell stabilizing, [26] anti oxidant [27] and antimicrobial activities, [28,29] supporting its traditional use in bronchial asthma and cough.

**Punarnavā (Boerhaavia diffusa L.)**

Punarnavā is a Rasāyana and Śothahara dravya traditionally used in Śvāsa, Kāsa, and Śotha. Phytochemicals include boeravinones, alkaloids, flavonoids, lignans, and triterpenoids. [30]

Experimental studies validate immunomodulatory, [31] antioxidant, [32] antibacterial, [33] and anti-inflammatory actions. [34] Classical practices such as Dhūmapāna and decoctions support its expectorant and airway-clearing effects. [35]

**Tāmalakī (Phyllanthus niruri L.)**

Tāmalakī is described for its Pittāśamana, Rasāyana, and Śothahara properties. Phytochemicals include flavonoids, lignans, terpenoids, and phenolic acids. [36] Experimental studies demonstrate antioxidant, antimicrobial, antihistaminic, antiviral, and immunomodulatory activities, [36] including balanced activation of innate and adaptive immune responses. [37]

**Pippalī (Piper longum L.)**

Pippalī is a prominent Dīpanīya, Rasāyana, and Śvāsahara dravya indicated in Śvāsa, Kāsa, and Hikkā. Phytochemical constituents include alkaloids such as piperine, flavonoids, and essential oils. [38]

Experimental studies demonstrate anti-inflammatory, [39] anti-asthmatic, [40] bronchodilatory, mast cell stabilizing, [41] and immunomodulatory actions. [42] Piperine has shown protection against pulmonary inflammation by suppressing cytokine cascades and enhancing antioxidant pathways, [43] validating Pippalī as a multi-targeted therapeutic agent in respiratory disorders. [44,45]

**Table 1. - Rasapañcaka & Classical Attributes of Kāśāhara Mahākaṣāya Dravyas**

| Dravya | Rasa | Guṇa | Vīrya | Vipāka | Doṣaghnatā | Classical Indications |
|---|---|---|---|---|---|---|
| Drākṣā | Madhura, Tikta, Kaṣāya | Snigdha | Śīta | Madhura | Tridoṣahara | Kāsa, Śvāsa, Dāha |
| Abhayā | Kaṣāya, Tikta | Laghu, Rūkṣa | Uṣṇa | Madhura | Kapha–Vātahara | Kāsa, Śvāsa, Pratiśyāya |
| Āmalakī | Amla (pradhāna), Madhura | Guru, Śīta | Śīta | Madhura | Tridoṣahara | Kāsa, Śvāsa, Rājayakṣmā |
| Duralabhā | Tikta, Kaṣāya | Laghu, Rūkṣa | Śīta | Madhura | Kapha–Pittahara | Kāsa, Śvāsa |
| Śṛṅgī | Kaṭu, Tikta | Laghu, Tīkṣṇa | Uṣṇa | Kaṭu | Kapha–Vātahara | Kāsa, Śvāsa, Hikkā |
| Kaṇṭakārī | Kaṭu, Tikta | Laghu, Rūkṣa | Uṣṇa | Kaṭu | Kapha–Vātahara | Kāsa, Śvāsa |
| Punarnavā | Tikta, Kaṣāya | Laghu, Rūkṣa | Uṣṇa | Kaṭu | Tridoṣahara | Śotha, Kāsa |
| Tāmalakī | Tikta, Kaṣāya | Laghu | Śīta | Madhura | Pitta–Kapha-hara | Kāsa, Śvāsa |
| Pippalī | Kaṭu | Laghu, Tīkṣṇa | Uṣṇa | Madhura | Kapha–Vātahara | Śvāsa, Kāsa |

**Table 2. Experimentally Proven Pharmacological Activities Relevant to Respiratory Disorders**

| Dravya | Key Experimental Actions | Respiratory Relevance |
|---|---|---|
| Drākṣā | Anti-inflammatory, antioxidant, antiasthmatic | Reduces airway inflammation, IgE |
| Abhayā | Antitussive, anti-inflammatory | Cough suppression |
| Āmalakī | Antioxidant, immunomodulatory | Improves lung defense |
| Duralabhā | Antimicrobial, anti-inflammatory | Controls infection-related inflammation |
| Śṛṅgī | Bronchodilatory, mast cell stabilizing | Asthma, allergy |
| Kaṇṭakārī | Bronchodilator, antihistaminic | Bronchial asthma |
| Punarnavā | Immunomodulatory, antioxidant | Allergic airway disease |
| Tāmalakī | Antihistaminic, antiviral | Respiratory infections |
| Pippalī | Anti-asthmatic, bioavailability enhancer | Chronic asthma |

## Discussion

The present review synthesizes classical Ayurvedic descriptions and contemporary experimental evidence to elucidate the therapeutic relevance of Kasahara Mahākāśāya dravyas—namely Drākṣā, Abhayā, Āmalakī, Duralabhā, Śṛṅgī, Kaṇṭakārī, Punarnavā, Tāmalakī and Pippalī—in the context of bronchial asthma, allergic airway diseases and

inflammatory respiratory disorders. The reviewed literature indicates that these drugs exert multi-targeted actions addressing the complex pathophysiology of asthma, which involves airway inflammation, bronchoconstriction, mucus hypersecretion, immune dysregulation, oxidative stress and recurrent infections.

A consistent observation across the reviewed herbs is their anti-inflammatory and immunomodulatory potential, which is central to asthma management. Pippalī, Śṛṅgī, Kaṇṭakārī, Drākṣā and Punarnavā demonstrated significant suppression of pro-inflammatory cytokines such as IL-1β, IL-4, IL-5, IL-6, IL-13, TNF-α and IL-17, along with a reduction in eosinophilic and neutrophilic infiltration in experimental asthma models. These findings are clinically relevant, as Th2- and Th17-mediated immune responses play a pivotal role in allergic asthma and airway remodeling. The ability of Pippalī (piperine) and Śṛṅgī to modulate Th2/Th17 balance, enhance regulatory cytokines such as IL-10, IFN-γ and TGF-β, and stabilize mast cells provides a mechanistic basis for their classical indication in Tamaka śvāsa.

Bronchodilatory and antispasmodic effects of Śṛṅgī and Kaṇṭakārī have been demonstrated through direct tracheal smooth muscle relaxation mediated by calcium channel blockade, muscarinic receptor inhibition and antihistaminic activity. Pippalī and Drākṣā also exhibited protective effects against histamine-induced bronchospasm. These pharmacodynamic actions correlate well with Ayurvedic descriptions of vāta-kapha śamana and explain the observed improvements in peak expiratory flow rate, airway resistance and preconvulsive dyspnoea time in experimental and clinical studies.

Oxidative stress is increasingly recognized as a key contributor to chronic airway inflammation and steroid resistance. In this context, Āmalakī, Drākṣā, Abhayā, Punarnavā and Tāmalakī stand out due to their potent antioxidant activity, mediated by hydrolysable tannins, flavonoids, lignans and phenolic acids. Clinical evidence in chronic smokers receiving Āmalakī extract further underscores its cardiopulmonary protective role, while experimental studies on Pippalī and Śṛṅgī demonstrate activation of endogenous antioxidant pathways, including superoxide dismutase and Nrf2, along with a reduction in lipid peroxidation markers. These antioxidant effects may contribute to preservation of airway integrity and attenuation of progressive lung damage.

The reviewed drugs also exhibit notable anti-allergic and mast cell-

stabilizing properties, particularly evident with Pippalī, Śṛṅgī, Kaṇṭakārī and Drākṣā. Reduction in mast cell degranulation, serum IgE levels, histamine release and capillary permeability supports their utility in allergic asthma and rhinitis. Furthermore, the antitussive actions of Kaṇṭakārī, Āmalakī, Abhayā and Punarnavā, achieved without central nervous system depression, suggest a favourable safety profile compared to narcotic antitussives and align with their long-standing traditional use.

Several drugs, including Kaṇṭakārī, Duralabhā, Tāmalakī, Drākṣā and Punarnavā, also exhibit antimicrobial and antiviral activity. Since respiratory infections often precipitate asthma exacerbations, these properties may offer additional protective benefits by reducing infective triggers and secondary inflammation. Selective antibacterial activity against pathogens such as Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa further supports their role in preventing complications associated with chronic airway disease.

From an Ayurvedic perspective, the convergence of rasāyana, śothahara, śvāsahara and kāsahara properties across these drugs reflects a holistic therapeutic approach that targets not only symptom relief but also immune balance, tissue nourishment and disease modification. Modern pharmacological findings corroborate these classical concepts, demonstrating that these botanicals act on multiple molecular and cellular targets rather than a single pathway.

However, despite robust experimental evidence, clinical data remain limited and heterogeneous, with variations in dosage forms, extracts and study designs. Most evidence is derived from animal models or short-term clinical studies, underscoring the need for well-designed randomized controlled trials employing standardized formulations and validated respiratory endpoints. Future research should also explore the synergistic effects of these drugs in compound formulations, as traditionally practiced, and evaluate their role as adjuvants to conventional therapy, particularly in steroid-dependent or refractory asthma.

## Conclusion

The present review highlights that the drugs of Kasahara Mahākāśāya possess complementary anti-inflammatory, bronchodilatory, immunomodulatory, antioxidant and antimicrobial activities, which collectively address the multifactorial pathophysiology of asthma and allied respiratory disorders. Classical Ayurvedic indications of kāsa and śvāsa are strongly supported by contemporary

experimental evidence. The multi-targeted pharmacodynamic actions of these drugs provide a rational scientific basis for their therapeutic use in respiratory care. Thus, Kasahara Mahākāśāya represents a promising integrative approach for managing chronic airway diseases.

## Limitations

The evidence reviewed is predominantly derived from experimental and preclinical studies, with limited high-quality clinical trials. Considerable heterogeneity exists in terms of drug extracts, dosage forms and outcome measures, making direct comparison difficult. Many studies evaluate individual drugs rather than the Mahākāśāya as a composite formulation. Additionally, long-term safety and pharmacokinetic data remain insufficient.

## Future Scope

Future research should focus on well-designed randomized controlled clinical trials using standardized formulations of Kasahara Mahākāśāya. Exploration of synergistic effects among constituent drugs and their role as adjuvants to conventional therapy is warranted. Studies evaluating long-term outcomes, steroid-sparing potential and quality-of-life parameters will further strengthen evidence for clinical integration. Molecular studies elucidating pathways of immune modulation and airway remodeling may provide deeper mechanistic insights.

## Declarations

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used **solely for minor language and grammar refinements** to improve clarity and readability. All scientific content, analysis, and conclusions remain the sole responsibility of the authors.

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