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Ekalaushadhi (Single-Herbal Drug) Based Management of Respiratory Disorders in Children: A Review of Scope and Clinical Relevance

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ABSTRACT:

Respiratory disorders are among the most common causes of morbidity in childhood and frequently require repeated medical care. In Ayurvedic pediatrics, *Ekalaushadhi* (single-drug therapy) is traditionally recommended for managing common respiratory conditions due to its simplicity, safety, and ease of administration—features particularly important in pediatric practice to reduce drug burden and improve compliance. This review evaluates the clinical relevance of *Ekalaushadhi*-based management in pediatric respiratory care, with reference to commonly used herbs such as *Yashtimadhu* (Glycyrrhiza glabra), *Vasa* (Adhatoda vasica), *Ardraka* (Zingiber officinale), *Pippali* (Piper longum), *Tulasi* (Ocimum sanctum), *Kantakari* (Solanum xanthocarpum), *Haridra* (Curcuma longa), and *Haritaki* (Terminalia chebula). A narrative review of classical Ayurvedic texts, pediatric references, and contemporary scientific literature was conducted. These herbs demonstrate expectorant, anti-inflammatory, bronchodilatory, and immunomodulatory actions, supporting their traditional use in pediatric cough, congestion, and recurrent respiratory infections. Their mild nature and acceptable palatability enhance tolerance and compliance. However, challenges remain, including variability in standardization, lack of pediatric-specific dosing guidelines, and limited high-quality clinical evidence.

Ekalaushadhi-based therapy represents a child-friendly and clinically relevant approach, warranting further systematic pediatric research and development of integrative clinical protocols.

INTRODUCTION:

Respiratory illnesses constitute one of the most common causes of morbidity among the pediatric population worldwide, particularly in children under five years of age[i]. Acute and recurrent respiratory conditions such as cough, bronchitis, and lower respiratory tract infections contribute substantially to outpatient visits, hospital admissions, and school absenteeism[ii]. Recurrent respiratory symptoms, especially wet or productive cough, lower children's quality of life and burden caregivers financially and psychologically[iii]. Cough in children is an important clinical symptom suggestive of sometimes excessive airway secretions and underlying respiratory pathology. Persistent cough in the pediatric age group is of particular concern, as children often fail to expectorate sputum effectively, leading to prolonged symptoms and recurrent infections[iv]. Respiratory diseases are a major cause of pediatric morbidity in India, which highlights the significance of promptly diagnosing and treating wet cough in order to avoid long-term respiratory problems[v]. Conventional management of pediatric cough often relies on symptomatic therapy and empirical antibiotic use, which may be unnecessary in many cases and contributes to antimicrobial resistance. In contrast, Ayurveda emphasizes correcting the underlying *Doṣhic* imbalance, especially Vata-*Kapha* predominance, rather than merely suppressing symptoms. The *Ekalaushadhi* approach offers advantages such as reduced drug burden, improved safety, better compliance, and ease of administration in pediatric practice. Thus, single-herbal drug therapy provides a rational, holistic, and child-friendly alternative for managing wet cough and related respiratory disorders. The present review aims to evaluate the role of *Ekalaushadhi* (single herbal drug) therapy in the management of common respiratory symptoms e.g. *Kasa* etc. It further explores the scope, clinical relevance, safety, and evidence gaps of single-drug interventions within an integrative pediatric respiratory care framework.

Methodology

The present study was designed as a narrative review to compile and analyze available Ayurvedic literature on *Ekalaushadhi* based management of respiratory problems in the pediatric population. Data were sourced from classical Ayurvedic texts along with electronic databases including PubMed, Google Scholar, the AYUSH Research Portal, and selected Scopus-indexed journals. A systematic search was conducted using keywords such as cough, wet cough, *Kāsa*, *Ekalaushadhi*, single herbal drug, and pediatric respiratory disorders. Studies and textual references focusing on pediatric age groups, cough, productive cough, and single herbal drug interventions were included.

Concept of *Ekalaushadhi* in Ayurveda

Ekalaushadhi refers to the therapeutic use of a single medicinal substance for disease management, a principle emphasized in classical Ayurvedic texts where appropriately selected drugs are advocated to correct specific *doṣic* imbalances. The therapeutic principle of *Ekalaushadhi* is based on precise assessment of *doṣa*, *dūṣya*, and *srotas*, enabling targeted action without unnecessary drug combinations[vi]. In pediatric practice, single-drug therapy offers advantages such as reduced drug burden, improved safety, better palatability, and enhanced compliance. *Ekalaushadhi* is particularly relevant in respiratory disorders like *Kāsa*, where *Vata-Kapha-alleviating* drugs with expectorant and channel-clearing properties can effectively address the underlying pathology.

Ekalaushadhi Drugs in Pediatric Respiratory care

In Ayurvedic practice, the management of *Kāsa* in children emphasizes the use of drugs that alleviate *Kapha*, clear obstructed *Prāṇavaha srotas*, and facilitate expectoration of accumulated *śleṣma*. Considering the physiological Kapha predominance in childhood and the sensitivity of pediatric patients to polypharmacy, *Ekalaushadhi* (single herbal drug) therapy holds particular clinical significance. Classical texts describe several individual herbs possessing *Vata-Kapha-śāmaka*, *śleṣma-niṣsāraka*, *dīpana-pācana*, and *srotoshodhana* properties, which directly address the *samprāpti* of respiratory problem addressed in Ayurveda. The judicious selection of a single drug based on *doṣha*, stage of disease, and symptomatology ensures targeted action with improved safety and compliance. The following table summarizes important *Ekalaushadhi* drugs indicated in pediatric respiratory care, along with their Ayurvedic properties and therapeutic relevance.

Table 1: *Ekalaushadhi* Drugs Used in Pediatric Respiratory Care[vii]

Drug	**Botanical Name**	***Rasa***	***Guna***	***Virya***	***Vipaka***	***Dosha Karma***	**Therapeutic Relevance**
Yashtimadhu	*Glycyrrhiza glabra*	*Madhura*	*Guru, Snigdha*	*Sheeta*	*Madhura*	*Vata-Pitta shamaka*	Soothes airway, facilitates smooth expectoration
Vasa	*Adhatoda vasica*	*Tikta, Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta shamaka*	Expectorant, reduces chest congestion
Ardraka	*Zingiber officinale*	*Katu*	*Laghu, Snigdha*	*Ushna*	*Madhura*	*Kapha-Vata shamaka*	Liquefies Kapha, promotes mucus clearance
Pippali	*Piper longum*	*Katu*	*Laghu, Snigdha*	*Anushna-sheeta*	*Madhura*	*Kapha-Vata shamaka*	Improves Pranavaha srotas function
Tulasi	*Ocimum sanctum*	*Katu, Tikta*	*Laghu, Ruksha*	*Ushna*	*Katu*	*Kapha-Vata shamaka*	Reduces mucus secretion, supports respiration
Kantakari	*Solanum xanthocarpum*	*Katu, Tikta*	*Laghu, Ruksha*	*Ushna*	*Katu*	*Kapha-Vata shamaka*	Bronchodilator, relieves productive cough
Haridra	*Curcuma longa*	*Tikta, Katu*	*Laghu, Ruksha*	*Ushna*	*Katu*	*Kapha-Pitta shamaka*	Anti-inflammatory, reduces airway edema
Haritaki	*Terminalia chebula*	*Kashaya (Pradhana), Amla, Madhura, Tikta, Katu*	*Laghu, Ruksha*	*Ushna*	*Madhura*	*Tridosha shamaka (Vata-Kapha pradhana)*	Supports mucociliary clearance, improves digestion and immunity, useful in chronic respiratory conditions

Role of *Ekalaushadhi* Herbs in Pediatric Respiratory Care

Yastimadhu: *Yashtimadhu* (*Glycyrrhiza glabra*) is widely recognized for its demulcent, expectorant and anti-inflammatory properties, primarily attributed to glycyrrhizin, liquiritin and flavonoids, which help soothe inflamed respiratory mucosa and promote mucus expulsion in wet cough [viii]. Preclinical studies have demonstrated antitussive activity by reducing cough reflex sensitivity and modulating inflammatory and oxidative stress pathways, including NF-κB signaling[ix]. Although randomized controlled trials evaluating *isolated Yashtimadhu* in pediatric cough are limited, clinical evidence from a placebo-controlled study using a polyherbal formulation containing *G. glabra* showed significant reduction in cough frequency and improvement in respiratory symptom scores in children with airway inflammation, supporting its adjunctive role in pediatric respiratory disorders[x]. *Yashtimadhu churna* into an Ayurvedic regimen effectively alleviates recurrent chronic cough (*Kasa*) in children, offering a safe alternative to conventional treatments and helping to prevent relapses. *Yashtimadhu* acts as a cough-reliever due to its sweet and unctuous qualities, soothing respiratory irritation, aiding in expelling *Kapha*, and addressing underlying *Vata* and *Kapha* imbalances[xi]. Safety remains an important consideration, as prolonged or excessive glycyrrhizin intake may cause pseudo-aldosteronism; therefore, short-term use with standardized dosing and clinical monitoring is recommended in pediatric practice[xii].

Vasa: *Vasa* (*Adhatoda vasica*) has been extensively studied for its role in respiratory disorders and is particularly relevant in the management of respiratory symptoms like cough. The alkaloids vasicine and vasicinone exert expectorant and mucolytic actions by enhancing bronchial secretions and facilitating clearance of viscid sputum, thereby reducing chest congestion[xiii] . Experimental studies have shown significant antitussive and bronchodilator effects through relaxation of bronchial smooth muscle and modulation of cough reflex pathways [xiv]. Clinical studies involving *Vasa*-based formulations in children with acute and subacute cough have demonstrated a reduction in cough severity and improvement in respiratory parameters [xv].

Ardraka* :Ardraka (Zingiber officinale*) has demonstrated significant therapeutic potential in the management of respiratory symptoms like cough due to its expectorant, anti-inflammatory and mucolytic properties. Active constituents such as gingerols and shogaols reduce airway inflammation, enhance mucociliary clearance, and

facilitate expectoration of thick bronchial secretions[xvi] Clinical observations and trials involving ginger honey mixture in children with cough have reported reduction in cough frequency, and improvement in respiratory comfort, demonstrating potential as an effective remedy with minimal side effects[xvii]. Honey and ginger mixture is more effective in treating dry cough in children than dextromethorphan. The natural mixture led to faster recovery and fewer side effects compared to conventional treatment[xviii]. *Gudardraka* a classical Ayurvedic formulation comprising *Ardraka* (fresh ginger) and *Guda* (jaggery), is traditionally indicated in the management of respiratory symptoms such as cough, throat irritation, and chest congestion, particularly in Kapha-dominant conditions[xix].

Pippali: *Pippali* (*Piper longum* Linn.) is a well-documented Ayurvedic single-drug intervention indicated in *Kasa*, particularly wet cough characterized by *Kapha* predominance. Owing to its *Katu rasa*, *Laghu guna*, *Ushna virya*, and *Madhura vipaka*, *Pippali* facilitates liquefaction and expulsion of thick bronchial secretions while supporting normal respiratory function. Classical Ayurvedic texts describe *Pippali* as *Kasaghna* and *Shwasahara*, highlighting its role in alleviating productive cough without excessive aggravation of *Vata*, which is especially relevant in pediatric practice[xx,xxi]. Contemporary pharmacological studies attribute its expectorant, anti-inflammatory, bronchodilatory, and immunomodulatory effects to piperine, the principal bioactive constituent [xxii]. Experimental evidence suggests that piperine enhances mucociliary clearance and reduces airway inflammation, contributing to symptomatic relief in productive cough conditions [xxiii]. A quasi-experimental study in 44 children aged 2-7 years using *Pippali churna* (1 g twice daily with milk for 30 days) reported marked reductions in cough frequency (p=0.002), severity, and sputum viscosity via CASA-Q assessment, with excellent tolerability[xxiv].

Tulasi: *Tulasi* (*Ocimum sanctum* Linn.) is widely described in Ayurvedic literature as an effective single-herb remedy in *Kasa* and *Shwasa*. Possessing *Katu* and *Tikta rasa*, *Laghu* and *Ruksha guna*, *Ushna virya*, and *Katu vipaka*, *Tulasi* promotes drying of excessive bronchial secretions and facilitates their elimination from the respiratory tract. A study found that steam inhalation with Tulsi leaves was significantly more effective than plain steam in reducing symptoms of upper respiratory tract infections in children. This intervention is described as a fast, non-invasive, and cost-effective method for managing respiratory distress and common cold symptoms at home[xxv]. Overall, *Tulasi* (*Ocimum sanctum*) demonstrates broad anti-inflammatory, antimicrobial, and immunomodulatory actions that support respiratory health. These properties provide a scientific basis for its safe and rational use in managing cough and recurrent respiratory infections in children[xxvi].

Kantakari: *Kantakari* (*Solanum xanthocarpum*) is a well-established Ayurvedic drug indicated for Kasa and Shwasa, particularly for productive cough associated with *Kapha* accumulation. Characterized by *Katu* and *Tikta rasa*, *Laghu* and *Ruksha guna*, *Ushna virya*, and *Katu vipaka*, *Kantakari* facilitates reduction of excessive bronchial secretions and improves airway clearance[xxvii,xxviii]. Modern pharmacological studies have demonstrated expectorant, bronchodilatory, anti-inflammatory, and antimicrobial activities of *Solanum xanthocarpum*, attributed to steroidal alkaloids such as solasodine and solasonine[xxix]. *Kantakari churna* produced significant improvements in the clinical features of Kaphaja Kasa, including cough frequency, expectoration, and chest congestion, in children with chronic bronchitis[xxx].

Haridra: *Haridra* (*Curcuma longa* Linn.) possesses *Tikta* and *Katu rasa*, *Laghu* and *Ruksha guna*, *Ushna Virya*, and *Katu Vipaka*, which collectively contribute to the reduction of excessive mucus, improvement of bronchial patency, and modulation of inflammatory processes in the respiratory tract. Turmeric root supplementation (curcuminoids) in children with persistent asthma reported improved disease control and fewer nighttime symptoms compared to placebo[xxxi]. *Rajanyadi Choornam* effectively reduced the severity of allergic respiratory disease symptoms in children and significantly improved biochemical markers such as serum IgE and absolute eosinophil count. The formulation was safe, cost-effective, and produced clinical improvement even at low doses within a short duration, with no adverse effects observed. These results support the study hypothesis that *Rajanyadi Choornam* is an effective and well-tolerated therapeutic option for pediatric ARD[xxxii]. *Curcuma longa* resulted in significant improvement in asthma control among children and adolescents compared to placebo with reduction in symptom severity and enhanced disease control, suggesting effective modulation of airway inflammation[xxxiii].

Haritaki: *Haritaki* (*Terminalia chebula*) is an important Ayurvedic single-herb intervention with therapeutic relevance in pediatric respiratory care, particularly in productive cough and mucus-associated airway conditions.

It is characterized by predominant *Kashaya rasa* with *Madhura, Amla, Tikta,* and *Katu anurasa*, *Laghu* and *Ruksha guna*, *Ushna virya*, and *Madhura vipaka*, which together facilitate clearance of bronchial secretions and support normal respiratory function. Modern pharmacological studies demonstrate that *Terminalia chebula* possesses expectorant, anti-inflammatory, antioxidant, and immunomodulatory properties, largely attributed to polyphenolic compounds such as chebulagic and gallic acids[xxxiv],[xxxv]. *Haritaki* (*Terminalia chebula* Retz.), administered in pediatric-appropriate preparations such as *churna, avaleha such as Agastyaharitaki, Chitrak Haritaki*, *Vyaghriharitaki* or decoction, has demonstrated therapeutic relevance in respiratory care through its expectorant, anti-inflammatory, antioxidant, and immunomodulatory actions, supporting effective management of productive cough and recurrent respiratory conditions in children.

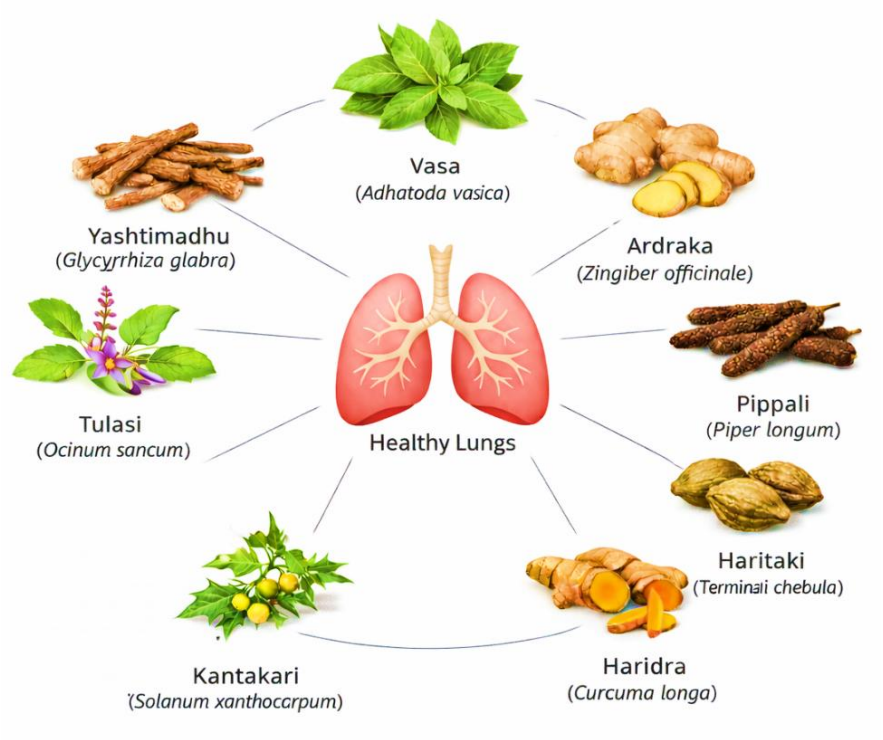

Figure 1: Ayurvedic *Ekalaushadhi* Herbs in Respiratory Care

Scope of *Ekalaushadhi* in Pediatric Respiratory Care:

The integration of traditional herbal interventions in pediatric respiratory care provides both preventive and curative benefits by addressing early pathological changes before progression to more severe illness. Early-stage intervention of single herbal drugs supports airway clearance and modulation of inflammatory responses, thereby improving respiratory comfort and reducing the risk of recurrent episodes. Such approaches may decrease dependence on multiple conventional medications, effectively lowering overall drug burden and minimizing the potential for adverse effects in children. Furthermore, the simplicity, safety, and cost-effectiveness of these interventions make them highly applicable in community health programs and outpatient settings, where accessibility and early management are critical. Collectively, these factors support the rational incorporation of evidence-informed traditional therapies into comprehensive pediatric respiratory care models.

Clinical Relevance and Safety:

Single–drug therapy in common pediatric respiratory care offers a rational, child-friendly approach, particularly for conditions such as wet cough and mild respiratory congestion. The use of carefully selected individual drugs allows better assessment of safety and therapeutic response in children, who are physiologically more sensitive to medications. These drugs are generally mild in action and well tolerated when administered at age-appropriate doses, thereby reducing the risk of adverse effects. Favourable taste and ease of administration enhance palatability and improve compliance, which is a crucial factor in pediatric practice. Dosage is individualized based on age, strength, and digestive capacity, following the principle of minimal effective dosing. However, limitations include the need for cautious use in prolonged therapy and in children with

underlying systemic or severe respiratory conditions.

Challenges and Research Gaps:
Although single–drug–based interventions are widely practiced in pediatric respiratory care, their scientific validation remains limited by the paucity of well-designed clinical trials conducted exclusively in children. Existing evidence is often extrapolated from adult studies or based on traditional clinical experience, which may not fully address the unique physiological and developmental considerations of the pediatric population. In addition, the absence of clearly defined pediatric-specific guidelines regarding appropriate indications, dosing, and duration of therapy restricts uniform clinical application. These limitations highlight the need for systematic research and the development of evidence-based, child-focused guidelines to strengthen the role of single drug–based therapies in pediatric respiratory care.

Future Perspectives:
Strengthening pediatric respiratory care requires focused efforts toward clinical validation of single drug–based therapies through carefully designed studies involving children. Such validation is essential to confirm safety, efficacy, and appropriate dosing within the pediatric age group. Integrative pediatric protocols that draw from both classical therapeutic principles and modern clinical assessment can support more structured and consistent practice. These protocols may help clinicians make informed decisions while addressing the practical needs of routine care. With improved research quality and clearly defined treatment frameworks, there is significant scope to advance evidence-based practice, allowing traditional single drug interventions to be applied more confidently and responsibly in common pediatric respiratory conditions.

CONCLUSION:

Ekalaushadhi (single herbal drug) based management offers a focused, practical approach to respiratory care in children, particularly for commonly encountered conditions such as cough and mild respiratory congestion. The findings indicate that the use of carefully selected individual herbs allows better assessment of therapeutic response while maintaining safety and simplicity in pediatric practice. Clinically, this approach is relevant due to its ease of administration, improved acceptability, and reduced risk of polyherbal interactions. At the same time, the scope of *Ekalaushadhi t*herapy extends to its potential integration with contemporary pediatric care through structured protocols and careful case selection. However, to strengthen its clinical relevance, there is a clear need for further pediatric-specific research and systematic clinical validation. Such efforts would help establish Ekalaushadhi-based interventions as evidence-supported options in integrative pediatric respiratory care.

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A.K: Conceptualization, Writing Original Draft, Supervision.
S.D.S: Conceptualization, Investigation, Supervision.
A.K: Conceptualization, Investigation, Supervision.
S.K.J: Resources, Conceptualization, Editing.
B.G.: Resources, Conceptualization, Editing.
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