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Asthma, Homoeopathy and CADAVIZ: Integrating Respiratory Anatomy with Homeopathic Approaches

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Abstract

Asthma is a chronic inflammatory airway disorder characterized by variable airflow obstruction, bronchial hyperresponsiveness, and recurrent respiratory symptoms that significantly affect quality of life across all age groups. Although conventional therapies such as bronchodilators and inhaled corticosteroids remain central to asthma management, their adverse effects and incomplete symptom control often impose an additional therapeutic burden. These limitations underscore the need for complementary, individualized approaches that address underlying mechanisms while minimizing long-term side effects.

This narrative review explores homeopathic principles of asthma care through detailed symptom interpretation and patient-centered reasoning, integrated with modern anatomical and physiological understanding. To enhance conceptual clarity, CADAVIZ, a virtual dissection table, is utilized to provide immersive three-dimensional visualization of the respiratory system. Layer-by-layer anatomical dissection and dynamic physiological simulations enable precise mapping of asthma pathology onto airway structures, including bronchial smooth muscle, mucosa, and alveolar units.

By correlating clinical manifestations such as bronchospasm, mucus retention, and ventilation–perfusion imbalance with their anatomical substrates, the review illustrates how individualized homeopathic symptom patterns align with respiratory physiology. Although current clinical evidence for homeopathy in asthma remains limited and methodologically heterogeneous, this integrative framework offers educational value and supports anatomically informed clinical reasoning. The combined use of digital visualization and individualized therapeutic interpretation may enhance understanding, teaching, and future research in complementary asthma care.

Keywords: Cadaviz; Homeopathy; Asthma; Respiratory Anatomy

1. Introduction

Asthma is a chronic inflammatory disorder of the airways characterized by variable airflow obstruction, bronchial hyperresponsiveness, and recurrent episodes of wheezing, coughing, chest tightness, and shortness of breath. These hallmark clinical features, experienced across all age groups, arise from a dynamic interaction between airway inflammation, smooth-muscle constriction, and mucus hypersecretion[1]. Figure 1, The Symphony of Symptoms and Side-effects for Asthmatics, illustrates that while the symptoms themselves impose a significant burden on patients, an additional layer of complexity arises from the adverse effects of conventional allopathic anti-asthmatic therapies.

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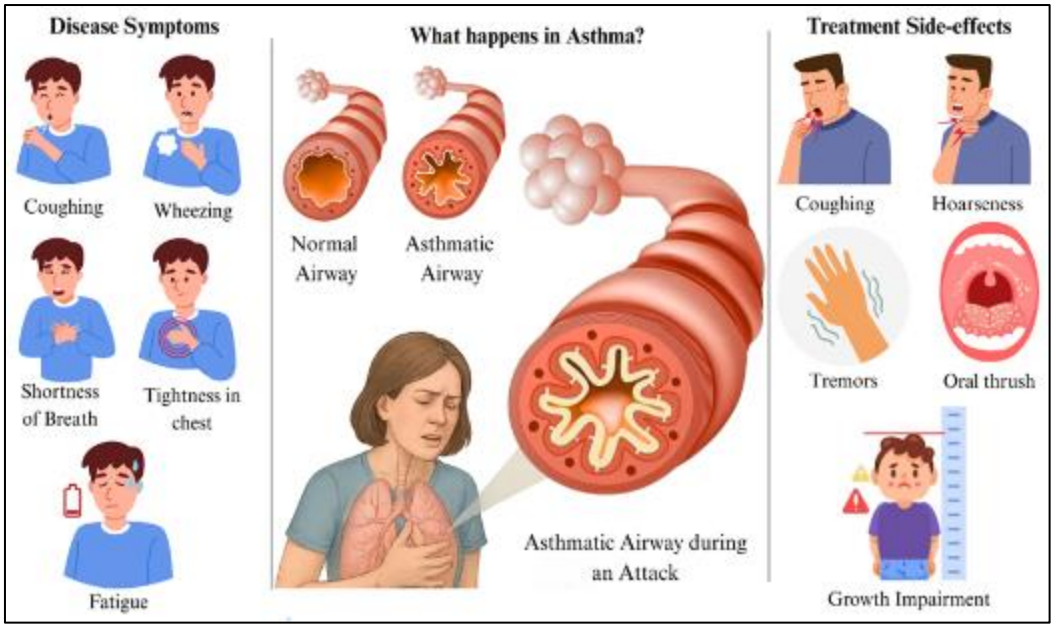

Figure 1 The symphony of symptoms and side effects for asthmatics

Short-acting and long-acting bronchodilators are indispensable for rapid relief; however, they are known to induce tremors, palpitations, nervousness, and, with frequent use, diminish responsiveness. Inhaled corticosteroids, the cornerstone of long-term control, are associated with oropharyngeal candidiasis, hoarseness, dysphonia, and, at higher doses, systemic consequences such as adrenal suppression and weight gain[2]. In paediatric populations, prolonged corticosteroid exposure has been linked to measurable growth impairment, adding another (Figure 1) of concern for clinicians and caregivers[3].

Together, the clinical features of asthma and the side effects of its commonly used treatments create a dual burden that is both physiologically intricate and personally impactful. This interplay is effectively depicted in **Figure 1.** What is more worrisome is that despite adherence to standard therapy, many individuals continue to experience breakthrough symptoms, recurrent exacerbations, and persistent reliance on rescue medications[4]. These challenges point to the limitations of conventional management and highlight the need for gentler, more individualized approaches that can address root causes while minimizing long-term adverse effects.

In this context, homeopathic care offers personalized therapeutic strategies that consider not only the outward symptom expression but also the underlying structural and systemic dimensions of the disease, providing a holistic complement to standard pharmacotherapy[5]. The current review seeks to examine the homeopathic principles of asthma care grounded in detailed symptom interpretation and patient-centred reasoning. With the help of CADAVIZ, a virtual dissection table the review also attempts to provide a clearer understanding of respiratory anatomy and physiology. It further explores how digital tools such as Cadaviz can be employed to gain an in-depth visual and conceptual understanding of the respiratory system, thereby enhancing both clinical insight and educational depth within homoeopathic practice. By mapping the intersections between anatomy, physiology, pathophysiology, and individualized remedy selection, this review narrates the therapeutic approaches to homeopathic asthma care.

2. Visualizing the Respiratory System with Cadaviz

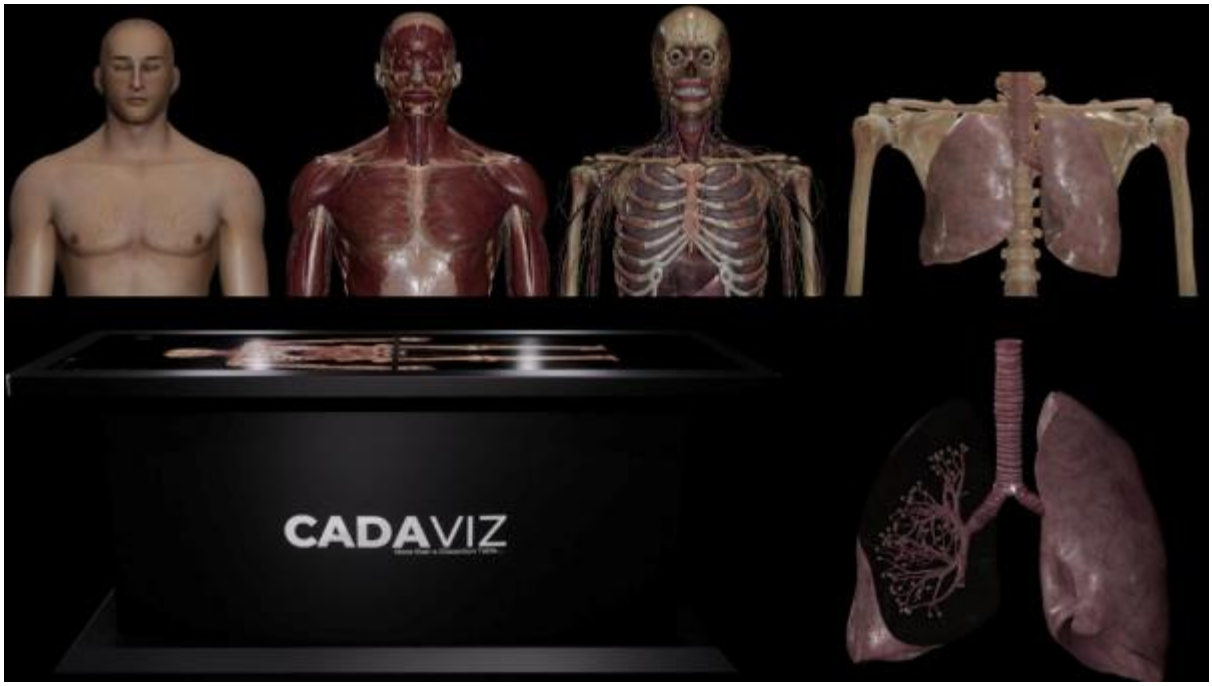

Figure 2 Cadaviz-Based 3D Visualization of Respiratory Anatomy

A growing number of studies have established the effectiveness of virtual dissection platforms in enhancing anatomical knowledge, improving spatial reasoning, and enriching clinical understanding among health sciences learners. From the student perspective, Cadaviz has been consistently valued for its ability to increase engagement, conceptual comprehension, and visual-spatial integration, enabling learners to interactively explore complex organ systems beyond the limitations of traditional cadaveric study[6]. These virtual tools complement formal anatomy education by fostering deeper curiosity and providing immersive learning experiences that support long-term retention. Within this context, the exploration of the respiratory system through Cadaviz offers both structural clarity and functional insight essential for understanding asthma and related respiratory conditions.

To achieve a comprehensive structural and functional understanding of asthma, the respiratory system was examined using Cadaviz's layer-by-layer, interactive dissection interface. The platform recreates the anatomy of a male virtual cadaver with lifelike precision, allowing users to progressively expose deeper thoracic structures through guided digital dissection[7]. Beginning from the superficial thoracic layers, including skin, pectoral muscles, and intercostal spaces, each component can be selectively removed to reveal the underlying rib cage and thoracic cavity. This method enhances appreciation of structural organization and spatial relationships, which are vital to understanding the mechanics of breathing and the anatomical basis of airway diseases.

As the dissection advanced, the parietal and visceral pleurae were visualized, followed by a realistic depiction of the right and left lungs, each displaying distinct lobes, fissures, and surface contours. The ability to manipulate these structures three-dimensionally provides a compelling spatial perspective, strengthening learners' sense of orientation within the thoracic cavity. Through zooming, rotation, and cross-sectional slicing, the bronchial tree could be examined in depth—from the tracheal bifurcation into primary bronchi through the secondary and tertiary branches, terminating in bronchioles and alveolar clusters. This detailed modeling supports understanding of airway hierarchy and continuity, laying the foundation for appreciating how pathological changes in asthma disrupt airflow and ventilation efficiency.

Equally significant is Cadaviz's dynamic visualization of thoracic relationships, where the lungs, mediastinum, heart, and great vessels are displayed in their physiological arrangements. This integrated perspective reinforces the notion that respiratory function depends on multiple structural interactions within a confined anatomical space. Learners can therefore conceptualize how pathological processes such as bronchial hyperreactivity, inflammatory swelling, or mucus retention alter not only the airways but also the mechanical and vascular dynamics of the chest.

The exploration then transitioned into Cadaviz's Physiology Module, which brings respiratory function to life through real-time animations. Here, diaphragmatic motion, thoracic expansion, and the resulting pressure gradients that drive ventilation are illustrated interactively. Animated airflow tracings demonstrate oxygen passage from large bronchi to the alveoli, where gas exchange across the alveolar–capillary membrane occurs. Overlays displaying ventilation–perfusion matching, pulmonary blood flow, and neural regulation emphasize the coordinated interplay between structure and function in maintaining efficient respiration.

By correlating these physiological animations with the preceding anatomical visualization, learners gain a holistic perspective on how delicate structural integrity supports effective ventilation. Understanding this integration makes it easier to comprehend how bronchoconstriction, mucosal edema, mucus plugging, and impaired gas diffusion lead to the clinical and functional manifestations of asthma. The immersive experience facilitated by Cadaviz not only enhances knowledge acquisition but also develops analytical reasoning as learners connect form, function, and pathology.

Overall, the use of Cadaviz in visualizing the respiratory system represents a transformative approach to anatomy and physiology education. It allows learners to transition seamlessly from appreciating normal structure and dynamic function to identifying how specific pathological disturbances alter pulmonary mechanics.

3. Mapping Asthma Pathology onto Respiratory Anatomy

Asthma is characterized by a triad of airway inflammation, bronchial hyperresponsiveness, and reversible airflow obstruction, all of which are rooted in distinct anatomical and physiological alterations within the respiratory tract[8]. Understanding these changes requires more than a superficial overview; it demands precise visualization of where and how pathological processes unfold along the airway hierarchy. The bronchi and bronchioles, lined by smooth muscle and mucosal tissue, are central to asthmatic pathology. Inflammatory mediators released during an asthmatic episode lead to edema of the mucosa, thickening of the basement membrane, and excessive mucus secretion, all of which narrow the airway lumen. Simultaneously, hypercontractility of bronchial smooth muscles further constricts airflow, producing symptoms such as wheezing, chest tightness, and dyspnea[9].

These pathological changes are not isolated events but are deeply intertwined with the structural layout of the respiratory system. For example, the density of smooth muscle increases as airways branch into smaller bronchioles, making these regions particularly prone to obstruction during a bronchospastic episode[10]. Additionally, the rich autonomic innervation of the lower airways, sympathetic signals promoting bronchodilation and parasympathetic inputs driving bronchoconstriction, plays a crucial role in modulating symptom severity[11]. The interplay of neural regulation, vascular responses, and mucosal integrity therefore shapes the individualized expression of asthma across different patients[12].

By mapping these pathologies onto the anatomical structures viewed in CADAVIZ, learners gain a spatial and functional understanding of how asthma manifests within the airways. Visualizing thickened mucosa, narrowed bronchioles, or altered diaphragmatic mechanics provides context that bridges clinical symptoms with underlying structural changes. This integrated perspective is particularly valuable for homeopathic practitioners, who rely on detailed symptom analysis and nuanced interpretation of modalities. When the anatomical basis of symptoms is clearly understood, remedy selection becomes more precise, and the interpretation of respiratory manifestations gains depth and clarity[13].

4. Integrating Anatomical Insights into Homeopathic Understanding of Asthma

Homeopathy approaches asthma as a reflection of deeper constitutional and systemic imbalances rather than a disorder confined to the bronchi and lungs. While conventional medicine focuses on bronchial inflammation, airway hyperreactivity, and mucus obstruction, homeopathy views these same anatomical events as expressions of disrupted internal harmony. When these principles are interpreted alongside modern respiratory anatomy, they create a clearer, more integrated picture of how homeopathic concepts connect to physiological processes[14].

4.1. Constitutional Susceptibility and Anatomical Vulnerability

Individuals with inherited tendencies—recurrent colds, allergies, or hypersensitive airways—exhibit structural and functional patterns that predispose them to bronchial narrowing or mucosal reactivity. Homeopathy addresses this susceptibility through long-term constitutional treatment aimed at strengthening systemic balance and reducing the likelihood of repeated airway dysfunction[15].

4.2. Disturbance of the Vital Force and Bronchial Reactivity

The homeopathic idea of a disturbed vital force aligns with exaggerated physiological responses seen in asthma: bronchospasm, mucosal edema, and autonomic imbalance. Triggers such as allergens, cold air, or emotional stress can provoke disproportionate airway contraction. Remedies aim to restore harmony to these regulatory mechanisms, moderating the organism's reactive patterns[16].

4.3. Individualized Symptom Expression and Anatomical Correlates

Homeopathy's hallmark is individualized prescribing with medicinal agents that mirror the varied anatomical manifestations of asthma. Some patients experience nocturnal airway narrowing, others show predominant mucus plugging, while some develop chest tightness linked to respiratory muscle strain. Matching these subjective expressions to their anatomical counterparts helps refine remedy selection based on the totality of symptoms[17].

4.4. Chronic Disease Theory and Shifts in Disease Expression

Hahnemann's chronic disease theory proposes that unresolved internal disturbances or suppressed symptoms may manifest deeper within the respiratory tract. Anatomically, this may present as persistent mucosal inflammation, heightened bronchial sensitivity, or chronic airway remodeling. Homeopathic management seeks to address these root disturbances rather than merely suppressing outward respiratory symptoms[18].

4.5. Mind–Body Interconnections and Autonomic Pathways

Psychological states, anxiety, grief, anticipation have well-documented effects on bronchial smooth muscle and autonomic tone. Homeopathy incorporates these psychophysiological dynamics into remedy choice, aligning emotional triggers with their anatomical consequences, such as vagal-mediated bronchoconstriction or stress-induced hyperventilation[19].

4.6. Acute and Chronic Dimensions of Airway Function

Homeopathy recognizes both the immediate anatomical crisis of an acute attack, such as bronchospasm, air trapping, wheeze and the deeper constitutional patterns that determine long-term airway reactivity. Acute remedies relieve tightening and obstruction, while chronic constitutional treatment aims to stabilize mucosal health, autonomic balance, and overall respiratory resilience[20].

When homeopathic principles are interpreted through the lens of respiratory anatomy, the pathophysiology of asthma becomes easier to contextualize. Spasmodic constriction corresponds to smooth muscle hyperreactivity; excessive mucus reflects mucosal defence efforts; nocturnal aggravations relate to circadian autonomic shifts[21]. Understanding these connections clarifies why certain remedies such as *Arsenicum album*, *Ipecacuanha*, or *Sambucus* match specific patterns of anatomical dysfunction in an individual suffering from asthama[22].

5. Homeopathic Remedies for Asthma: Understanding the Symptom Anatomy Correlation

Many traditional homeopathic treatment modalities closely reflect underlying respiratory physiology, such as bronchial constriction, mucosal swelling, mucus retention, and altered ventilation, perfusion dynamics. Identifying these overlaps enhances the rationale for remedy selection[23]. For instance, Antimonium tartaricum characterized by pronounced rattling of mucus with minimal expectoration, reflects marked bronchial obstruction and impaired mucociliary clearance. The relief experienced by sitting upright corresponds to gravity-assisted expansion of dependent lung regions, enhancing airflow and gas exchange. Such symptom clusters often appear in patients with compromised respiratory mechanics, including older adults or individuals with emphysematous chest changes[24].

Another example of linking airway anatomy with the effects of a traditional remedy is Justicia adhatoda known as Malabar nut or Vasaka which interacts with the smooth muscles of the bronchial tubes to ease airway constriction, aligning its traditional indications with the physiological changes underlying asthma and other obstructive respiratory conditions[25]. Similarly, Arsenicum album characterized by wheezing, restlessness, and midnight aggravation, reflects the physiological reality of asthma, where bronchial constriction, mucosal irritation, and heightened respiratory effort mirror the remedy's traditional indications[26].

Natrum Sulphuricum addresses the lower bronchi and bronchioles, where thick, greenish mucus accumulates in asthma triggered by humid conditions. By facilitating mucus clearance and reducing bronchial hyperreactivity, it improves airflow and ventilation in affected lung regions[27]. Phosphorus supports alveolar and bronchiolar function in structurally

weak lungs prone to recurrent infections and inflammation, enhancing gas exchange and reducing susceptibility to pneumonia, thereby addressing chronic respiratory compromise often seen in asthmatic patients[28].

Kali Bichromicum primarily acts on the nasal passages, paranasal sinuses, and larger bronchi, promoting clearance of thick, stringy mucus and alleviating upper airway obstruction. This improves airflow and reduces congestion, particularly in cases of chronic bronchitis or sinusitis-associated asthma[29]. Collectively, these remedies exemplify how classical homeopathic symptom patterns correspond to specific anatomical and physiological changes in the respiratory system. By linking symptomatology with airway anatomy, clinicians can better understand remedy selection and provide targeted, individualized support for asthma management. The correlations between classical homeopathic symptom patterns, airway anatomy, and respiratory physiology are summarized in Table 1.

Table 1 Homeopathic Remedies and Their Correlation with Respiratory Anatomy and Physiology in Asthma

Remedy	Key Symptom Pattern	Anatomical Focus	Physiological Correlate	Clinical Relevance
Antimonium tartaricum	• Rattling chest sounds. • Profuse mucus with minimal expectoration. • Relief on sitting upright.	• Bronchi •Bronchioles.	• Marked airway obstruction. • Impaired mucociliary clearance. • Gravity-assisted lung expansion improves airflow.	• Weak respiratory mechanics. • Elderly patients or emphysematous chest patterns.
Justicia adhatoda (Vasaka)	• Wheezing. • Chest tightness. • Dyspnoea.	• Bronchial smooth muscle.	• Bronchospasm. • Reversible airway narrowing.	• Obstructive airway physiology. • Bronchial hyperreactivity.
Arsenicum album	• Wheezing with anxiety. • Restlessness. • Midnight aggravation.	• Bronchi. • Bronchial mucosa.	• Bronchoconstriction. • Mucosal irritation. • Autonomic imbalance.	• Nocturnal asthma. • Increased respiratory effort.
Natrum sulphuricum	• Thick, greenish mucus. • Symptoms aggravated by damp or humid weather.	• Lower bronchi. • Bronchioles.	• Excess mucus secretion. • Bronchial hyperreactivity.	• Humidity-triggered asthma. • Mucus-dominant disease patterns.
Phosphorus	• Recurrent chest infections. • Breathlessness. • Tendency toward pneumonia.	• Bronchioles. • Alveoli.	• Reduced alveolar integrity. • Impaired gas exchange.	• Structurally vulnerable lungs. • Chronic respiratory compromise.
Kali bichromicum	• Thick, stringy, tenacious mucus. • Associated sinus involvement.	• Nasal passages. • Paranasal sinuses. • Large bronchi.	• Mucus stasis. • Impaired mucous clearance.	• Asthma associated with sinusitis. • Chronic bronchitis–related asthma.

6. Evidence and Clinical Correlates

While classical homeopathic remedy selection is grounded in individualized symptom patterns and their anatomical correlates, the clinical evidence supporting homeopathy in asthma and related respiratory disorders remains methodologically diverse. Existing studies primarily emphasize patient-reported outcomes, feasibility of individualized

prescribing, and adjunctive roles alongside conventional care, rather than definitive physiological modification of airway pathology. Evidence directly related to bronchial asthma begins with randomized controlled trials in adult populations. Qutubuddin et al. (2019) conducted a double-blind, placebo-controlled trial evaluating individualized homeopathy as an adjunct to usual care in adults with bronchial asthma. The study reported improvements in symptom scores and reduced dependence on rescue medication, though changes in objective pulmonary function parameters were modest[30].

Complementing this, Topcu et al. (2020) assessed the addition of homeopathy or reflexology to conventional asthma management and demonstrated significant improvement in asthma-related quality of life, despite the absence of consistent effects on markers of airway inflammation or bronchial hyperresponsiveness[31]. Feasibility and maintenance effects of individualized homeopathy have also been explored in younger populations. Hotta et al. (2018) employed a randomized withdrawal design in adolescents with perennial asthma, demonstrating the practicality of rigorous trial methodologies and suggesting sustained symptom control with continued individualized treatment[32]. However, the study was not powered to assess structural or physiological airway changes.

Observational evidence, such as the prospective study by Ram et al. (2021) on Blatta orientalis in bronchial asthma, reported symptomatic improvement particularly in mucus-dominant cases, reflecting correlations with bronchial obstruction and impaired clearance, though the lack of randomization limits interpretability[33]. Further insight is provided by studies in anatomically and pathophysiologically related airway conditions. Randomized controlled trials in allergic rhinitis (Dixit et al., 2025; Siewert et al., 2022) and chronic rhinosinusitis (Misra et al., 2021) have demonstrated symptomatic benefit from individualized homeopathy. These conditions share mucosal inflammation, secretion dynamics, and airway hypersensitivity with asthma, supporting the concept of a unified respiratory tract response to individualized intervention[34-36].

Broader recall-based and pragmatic trials offer additional contextual evidence. Nayak et al. (2022) reported adjunctive benefits of individualized homeopathy in COVID-19–related respiratory illness[37], while Oberbaum et al. (2024) demonstrated comparable outcomes between homeopathy and conventional primary care in pediatric populations over long-term follow-up. Although not asthma-specific, these studies reinforce the potential role of individualized homeopathic care in respiratory symptom modulation and patient-centered outcomes[38].

Collectively, the current body of evidence suggests that homeopathy may contribute to improved symptom perception, quality of life, and reduced treatment burden in asthma when used as an adjunct to standard care. However, consistent effects on core respiratory physiology, such as airway inflammation, smooth muscle tone, and ventilation–perfusion dynamics—remain insufficiently demonstrated. Integrating anatomical visualization platforms such as CADAVIZ offers a novel pathway to align symptom-based prescribing with specific airway structures, enabling more anatomically informed clinical reasoning and supporting future hypothesis-driven research in homeopathic asthma care.

7. Conclusion

Asthma represents a complex interplay between airway structure, physiological regulation, and individualized symptom expression. While conventional pharmacotherapy remains indispensable for disease control, its limitations in addressing long-term symptom variability, adverse effects, and patient-specific patterns underscore the need for complementary frameworks that emphasize individualized understanding. This perspective review highlights how homeopathic approaches, when interpreted through the lens of modern respiratory anatomy and physiology, offer a conceptual model that aligns symptom individuality with structural and functional airway dynamics.

The integration of CADAVIZ as a digital anatomical visualization platform provides a valuable bridge between traditional symptom-based homeopathic reasoning and contemporary biomedical knowledge. By enabling immersive, three-dimensional exploration of the respiratory system, CADAVIZ enhances understanding of airway hierarchy, smooth muscle behavior, mucosal responses, and ventilation–perfusion relationships that underpin asthmatic pathology. This anatomical grounding allows homeopathic practitioners and learners to contextualize clinical symptoms within precise structural correlates, strengthening interpretative clarity and educational depth.

Although current clinical evidence for homeopathy in asthma remains limited and heterogeneous, the reviewed studies suggest potential benefits in symptom perception, quality of life, and adjunctive care outcomes. Importantly, this review does not position homeopathy as a replacement for standard asthma management but as a complementary perspective that may enrich patient-centered care through individualized assessment and holistic interpretation.

By integrating digital anatomy, physiological insight, and homeopathic principles, this review proposes a novel interdisciplinary framework that supports learning, clinical reasoning, and future research. Such anatomically informed approaches may facilitate more rigorous hypothesis generation, improve educational strategies, and encourage collaborative exploration of complementary care models in asthma management.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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