

A Review on Herbal Medicines in Chronic Disease Management - Asthma

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Abstract: *Asthma is a chronic respiratory disorder characterized by airway inflammation, hyperresponsiveness, and variable airflow obstruction, leading to symptoms such as wheezing, coughing, chest tightness, and breathlessness. Affecting more than 300 million individuals worldwide, asthma arises from complex interactions between genetic predisposition and environmental triggers, including allergens, pollutants, and respiratory infections. Immunological mechanisms involving mast cells, eosinophils, and T lymphocytes play a central role in disease progression, with distinct phenotypes such as T2-high and T2-low asthma guiding therapeutic strategies. Despite advances in inhaled corticosteroids and biologics, poor disease control remains a global challenge due to inadequate adherence, misdiagnosis, and severe refractory forms. Recent research emphasizes precision medicine, biomarker-based diagnostics, and innovative drug delivery systems to improve patient outcomes. This review highlights current understanding of asthma pathophysiology, classification, management strategies, and emerging directions in research and therapy*

Keywords: Asthma, Boswellia serrata phytosome, Complementary intervention, Corticosteroids, Long-acting beta agonists

I. INTRODUCTION

Asthma is a common chronic inflammatory disease that shows a lot of variety in both its causes and symptoms. It is mainly marked by reversible airflow blockage and bronchospasm. Patients often experience a wide range of inflammatory patterns and a mix of symptoms, including wheezing, shortness of breath, cough, increased airway sensitivity, and excessive mucus production. In terms of causes, asthma has both environmental and genetic factors.

The inflammation in the airways comes from common environmental allergens, triggering an inappropriate immune response in genetically susceptible people. Additionally, neuromuscular and psychological factors may also play significant roles in causing an asthma attack. Despite treatment progress, the number of asthma cases has risen over the past few decades, along with an increase in severity and death rates, partly due to the absence of a clear and effective cure. Treatment with inhaled corticosteroids (ICS) has significantly changed asthma management and is now seen as the mainstay of ongoing asthma treatment. Current guidelines recommend using a combination of ICS and long-acting beta-agonists (LABA) for patients with mild to severe persistent asthma. However, combining ICS and LABAs has raised safety concerns, particularly regarding the risk of severe asthma attacks and the low adherence to ICS treatment. Because there is no clear and safe long-term treatment for asthma, many patients have turned to integrative medicine to help lessen their symptoms or reduce reliance on prescription medications. Complementary or alternative medicines, such as Chinese herbs, Indian remedies, and Japanese herbal medications, are popular among asthma patients and are often used alongside standard treatments.

An example of traditional medicine used for asthma symptoms is Boswellia serrata extract. This preparation comes from a tropical tree and contains triterpene compounds known for their anti-inflammatory properties. These compounds, called boswellic acids, work by inhibiting lipoxygenases, which are responsible



for producing leukotrienes, proteases, and nuclear factor kB, all of which are involved in various chronic inflammatory diseases. They also reduce the overproduction of tumour necrosis factor (TNF- α) and matrix metalloproteinases (MMP), both of which are important in inflammatory processes. *Boswellia serrata* extracts have been used in several chronic inflammatory conditions, such as chronic intestinal disorders, asthma, and rheumatic diseases, showing positive results.

This remedy is generally well tolerated and has a better safety profile compared to other common anti-inflammatory drugs like steroids. The purpose of this study was to examine the effectiveness of oral administration of Casperome® (Indena SpA), a highly standardised *Boswellia serrata* extract in a phospholipid-based delivery system (known as Phytosome) that enhances the extract's bioavailability.

The study aimed to determine its impact on reducing the necessity for ICS and LABA therapy in asthma patients.

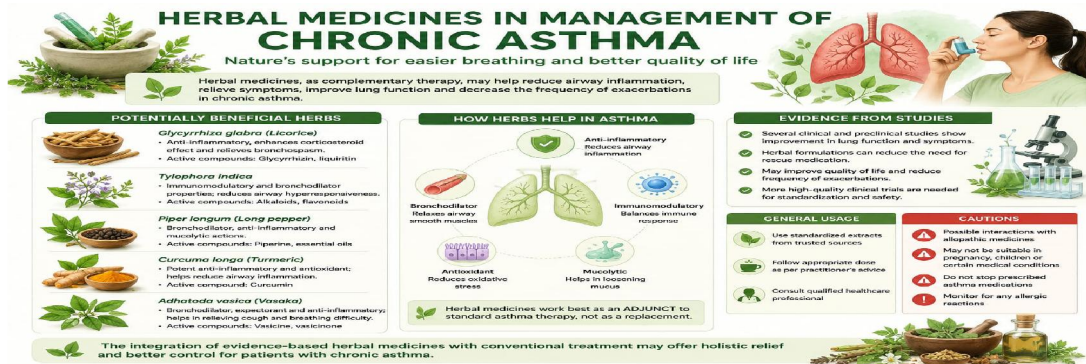


Fig.1 Herbal Medicine In Management of Chronic Asthma

Background

Asthma and allergic disorders are believed to be rising both in Western nations and in developing regions. Although extensive clinical and epidemiological studies have been carried out to understand why only certain people develop asthma and allergies, the exact causes of these conditions are still not clearly known. Exploring differences in disease occurrence between various populations may provide better insights into their origins, yet global information on the variation in asthma and allergy prevalence remains limited.

Asthma is considered one of the most significant childhood illnesses, contributing to high levels of sickness and reduced quality of life. The increasing number of hospital admissions and primary healthcare visits due to childhood asthma has raised concerns that both the frequency and severity of wheezing disorders may be growing across the world.

Types of asthma

Table 1:

| Type of Asthma | Main Trigger | Common in |
|------------------|-----------------------------------|-------------------------------|
| Allergic | Allergens (pollen, dust, etc.) | Children / Atopic individuals |
| Non-Allergic | Stress, exercise, infection, etc. | Adults |
| Seasonal | Pollen / Cold air | Allergy-prone people |
| Exercise-Induced | Physical activity | Athletes/teens |
| Occupational | Workplace irritants | Adults |
| Childhood | Genetics & allergies | Children |
| Adult-Onset | Hormonal/infection/stress | Adults |
| Severe | Resistant to treatment | Any age |
| Nocturnal | Night airway inflammation | All age groups |



Table 2:: Risk factors and epidemiologic impact

| Risk factor | Mechanism | Epidemiologic impact |
|-------------------------------|--|---|
| Aeroallergens | Sensitisation → airway inflammation | Higher prevalence where exposure/sensitisation is common |
| Air pollution/urbanisation | Irritant-induced hyperresponsiveness | Increased symptoms, healthcare use, and measured prevalence |
| Early-life microbial exposure | Immune modulation (hygiene hypothesis) | Regional differences in incidence/prevalence |
| Tobacco smoke | Inflammatory and irritant effects | Greater burden, worse control in exposed groups |
| Socioeconomic access | Diagnosis and treatment access | Apparent prevalence and outcomes vary with access |
| Phenotypes/endotypes | Biological heterogeneity | Different patterns by age, environment, and |

Patients and methods

Study Population :

The study population included adult subjects (age between 18 and 80 years old) diagnosed with asthma and currently under treatment with ICS + LABAs; treatment with antihistamines or Oral xanthine derivatives were also lowed.

The exclusion criteria were:- Respiratory diseases other than asthma;- Kidney or renal diseases;- Tumor diseases;- Pregnancy, lactation, desire for pregnancy;- Use of other anti-leukotriene agents (Lukast class of medications);- Use of supplements other than those pre Use of inhalers other than those specified in the inclusion criteria;- Use of any other inhalant method (fumigations, etc.)

All the subjects signed the informed consent form before the enrollment in the study

Treatment for Asthma:



Figure 2. Tips For Using your Asthma Action plan

1. Pharmacological management

Inhaled corticosteroids (ICS): Remain the cornerstone of therapy; used daily or as-needed in mild asthma.

ICS-formoterol combination: Recommended as both maintenance and reliever therapy (MART), reducing exacerbations compared to SABA-only use.

Long-acting β2-agonists (LABAs): Always combined with ICS, never used alone.



Leukotriene receptor antagonists (LTRAs): Alternative in children or patients intolerant to ICS.

Biologics: Anti-IgE (omalizumab), anti-IL-5/IL-5R (mepolizumab, benralizumab), anti-IL-4R (dupilumab) for severe Type 2 inflammation asthma.

Oral corticosteroids: Reserved for acute severe exacerbations; minimized due to systemic side effects.

2. Non-pharmacological strategies

Trigger avoidance: Allergen control, smoking cessation, pollution reduction.

Vaccination: Influenza and COVID-19 vaccines recommended.

Patient education: Inhaler technique training, adherence support, written asthma action plans.

3. Biomarker-guided therapy

Blood eosinophil count (BEC) and fractional exhaled nitric oxide (FeNO) now play a central role in tailoring biologic therapy and predicting response.

Helps stratify patients for biologics vs. conventional ICS/LABA therapy.

4. Emerging and adjunctive therapies

Bronchial thermoplasty: For selected severe asthma patients unresponsive to drugs.

Digital health tools: Smart inhalers, telemedicine monitoring.

Precision medicine approaches: Integration of genomics and proteomics for individualized treatment.



Figure 3: Emerging and adjunctive Therapies in Asthma

II. CONCLUSION

Asthma remains a major global health challenge, characterized by chronic airway inflammation, variable airflow limitation, and heterogeneous clinical phenotypes. Despite significant advances in understanding its immunopathology and the development of effective therapies such as inhaled corticosteroids and biologics, disease control continues to be suboptimal in many patients due to poor adherence, environmental exposures, and refractory forms. The future of asthma management lies in precision medicine, where biomarker-driven diagnosis and individualized treatment strategies can optimize outcomes. Moreover, innovations in drug delivery systems, patient education, and public health interventions are essential to reduce the burden of asthma worldwide. Continued research into genetic, environmental, and immunological determinants will not only refine therapeutic approaches but also pave the way for preventive strategies. Ultimately, integrating clinical, technological, and societal efforts is crucial to transform asthma care from reactive management to proactive, personalized prevention and control.



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