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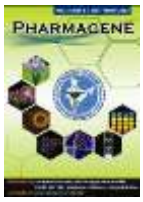


# Asthma Therapy in Ayurveda: An Ancient Scientific Approach

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**Abstract** Bronchial asthma is well-known hypersensitivity disorder which prevalence is being rapidly intensified in present world particularly in developed countries. Since no adequate therapy is made available by modern medicine for its terminal and long lasting cure, complementary and alternative system of medicines are looked up for possibility by patients as well as physicians. Ayurveda being a major system of traditional medicines in the world, it cumulates abundant description on condition and therapy for asthma. Effort has been made to carry out overview about asthma therapy in Ayurveda view with possible comparative studies. Etiopathogenesis given by Ayurveda in ancient terms can be reasonably correlated with the modern findings. Therapeutically Ayurveda has used almost naturals to combat asthmatic condition as like other traditional system of medicines. But the way and sense to bring about use of naturals is extensively differing from the conventional approach of herbal usage. This unique sense of herbal usage by Ayurveda and how it proves advantageous to patients is discussed in present review. Ayurvedic herbal drugs, which have shown anti-asthmatic activity by modern findings, are summarized here to establish optimistic ethnopharmacological correlation. An attempt has also made to highlight other aspects of Ayurvedic therapy for clinical implementations of asthma either as independent or as integrated therapy approach.

**Keywords:** Bronchial Asthma, Complimentary and alternative system of medicine (CAM), Bronchial Hyper responsiveness (BHR), Ethnopharmacology.

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## INTRODUCTION

Bronchial asthma is a well-known hypersensitivity disorder characterized by ventilator insufficiency. It is an exaggerated immune response occurs as a most common chronic disorder of modern society explained mainly as because of increased stress on the immune system by factors such as greater chemical pollution in the air, water and food. Its prevalence is rapidly increased in terms of both severity and incidence particularly at childhood ages in developed countries. It is also considered as an adversary of medical treatment for various specific ailments that can alter immune balance. Approximately 50% of children, but a much smaller percentage of adults, have clearly defined allergen exposure that can be associated with their asthma[1]. Bronchial hyperresponsiveness (BHR) is a disappointing adaptation in individuals reasonable for provoking exacerbation by allergen. Multidisciplinary scientific investigations suggest solutions for either prevention by allergen exposure or interrupt sequel after exacerbation in order to provide lesser harm to tissues by immune response. The broad aim of this article is to provide summary about Ayurveda efforts for asthma care. It is written with the intension that its way to use natural medicines should justify for implementation as a whole therapy, or in order to set a systemic integrated approach. This approach can than helpful to those patients burdened by drug induce toxic side effect and have turned to seek help from natural care.

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## 2. AYURVEDIC CONCEPT OF ASTHMA

The features of bronchial asthma is quite comparable with the disease "*tamak-swasa*" described in Ayurveda. In fact *swasa* is a major clinical condition according to Ayurveda that includes classes & sub-classes in it, carries symptoms can closely resembles with chronic obstructive pulmonary disease situation. Ayurveda describes etiology & pathogenesis of all classes of *swasa* including *tamak-swasa* (bronchial asthma) almost similar with just little difference. However, the treatment modalities described are specific with class to class & sub-class [2].

### *2.1 Etiology of bronchial asthma:*

The fundamental constituents that constitute living body & its total physiological aspects are considered as *vata, pitta & kapha* (collectively referred as *dosha*) and imbalance to their existing proportion is responsible for provoking any disease according to Ayurveda. So disease is regarded as just state of *dosha imbalance*. The disease then can manifest variably as symptoms, according to etiology & pathogenesis it follows. Thus two major considerations of illness origin are the *dosha* imbalance & specific pathogenesis they follow which results into specific symptom manifestation. On the other hand, factors produce *dosha* imbalance is diminution of those factors that balance *dosha* homeostatically. The factors which give way to specific pathogenesis followed by *dosha* is individual specificity depend on genetic make-up, widely known as *prakruti*.

In bronchial asthma, *dosha* imbalance is caused by simultaneous aggravation of *kapha* & *vata.* The suggested set of factors may aggravate *kapha* & suggested set of factors may aggravate *vata* separately. But simultaneous aggravation of *vata* & *kapha* may be due to some specific causative factors which are described in Ayurveda texts,

1. Exposure to dust, smoke & wind constitute airborne pollen.
2. Residing in cold place.
3. Stress that may induced by exercise (particularly in cold climate) or by sexual intercourse.
4. Habitual intake of some edible oils.
5. Constipation associated with flatulence.
6. Dryness particularly lower respiratory & upper G.I.T. region due to non-unctuous food.
7. Excess fasting or excess intake of food & agitated digestion resulted from it.
8. As a consequences of some disease [2].

#### *2.1.1 Pathogenesis of bronchial asthma:*

The specific causative factors responsible for the genesis of asthma may produce it by satisfying two conditions. Firstly, they should vitiate upper G.I.T. region, as a result from simultaneous aggravation of *kapha* and *vata* in upper G.I.T. & secondly they should produce obstruction to the different channel of circulation, which meant for nourishment, particularly to respiratory system. The pathogenesis occurs finally by two consequent steps. First, which responsible for development of predisposition of bronchial hyperresponsiveness & second which responsible for generation of acute exacerbation.

Step-1**:** The *vata* present in respiratory region get aggravate due to aggravation of *kapha* & *vata* in upper G.I.T. region. According to classical terms, *vata* is a set of all inductees liable for catabolism, may beneficial or malicious depend upon condition either balanced (physiological) or unbalanced (pathological) respectively. Here aggravated *vata* may produce over catabolic state in respiratory region, particularly to bronchus parts. Simultaneously blockage of different channel of nourishment may have a role in induction of malnourishment to the tissues of respiratory systems, particularly bronchial epithelial. Finally it gives way to critical, uncommon and undesirable adaptation of bronchial epithelial. Thus, aggravated *vata* (appear as a sign of damaged mucosa) prepare a ground for bronchial hyperresponsiveness, which can trigger acute exacerbation justified by consequence step.

Step-2**:** When patient having bronchial hyperresponsiveness, if get higher aggravation of *vata* & *kapha* acute exacerbation can occur. Suggestive causative factors above described same as step-1 also became responsible for this high aggravation. This leads to excessive mucous production by damaged epithelium & bronchus constriction that end into acute exacerbation. The reoccurrence and severity of bronchial asthma then depend widely on exposure towards causative factors by subject. Status of terminal curability also decided on this exposure and aggravation according to Ayurveda [2-4].

## 3. WAY OF HERBAL USE & DILEMMA

Tremendous expansion in usage of single herbal drug or herbal formulation have been observed at current era, in the form of either directly or behalf of Complementary & Alternative System of Medicine (CAM). This approach is more implemented where asthma like clinical condition is exist in which terminal and long lasting relief by modern therapeutics remains unpredictable [5,6]. On other hand asthma is recognized disease from centuries and much more is suggested for its therapy by different traditional system of medicines world-widely. They employ almost naturals & are found to be safe, efficacious and cost-effective by community physicians and patients. One survey by the national asthma campaign found that 60% of people with moderate asthma & 70% with severe asthma have used complementary and alternative medicine to treat their condition [7]. Herbal medicine is the third most popular choice of both adults (11%) and children (6%) sufficiently [8].

In the way to ensure efficacy, number of crude drug & herbomineral preparation are selected from the complementary and alternative medicines, for the phytochemical screening and establishment of

phytochemical-pharmacological correlation profile. As a result, number of drugs could be declared to have a role in asthmatic condition on the bases of their phytochemical and preclinical studies. Consequently numbers of natural products are selected for the clinical trial. This clinical implementation is concluded as clinical database & up to yet considerable clinical database is available by different

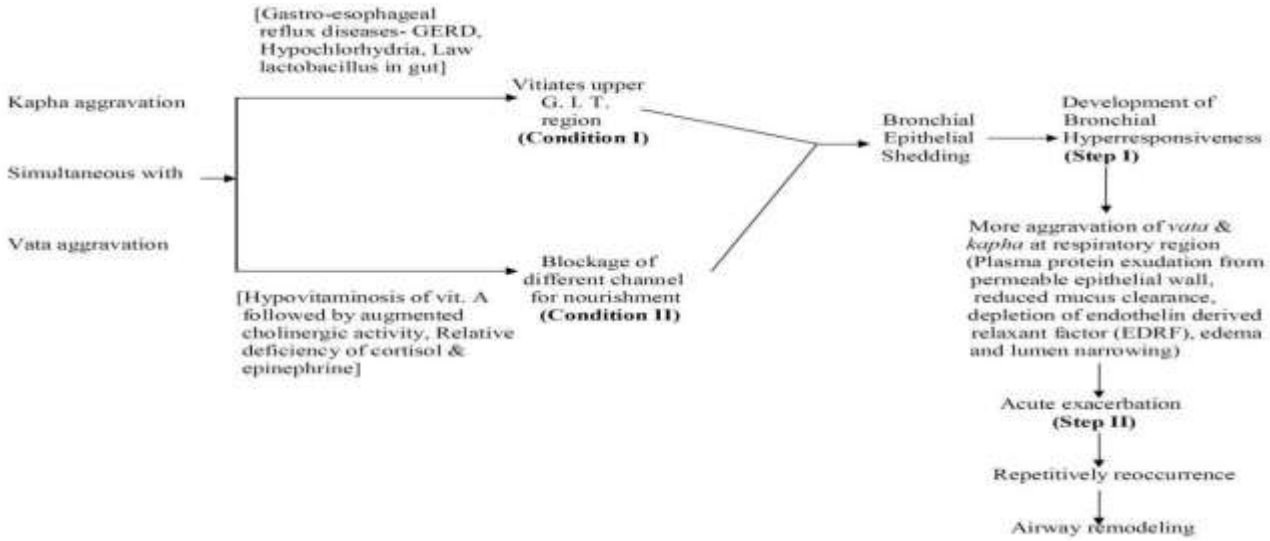


**Fig.1- Correlation between evidence based causative factors & Ayurvedic Etiopathogenesis**

| Sr. No. | Name of herbal drug | Proposed mechanism contributes anti-asthmatic effect [11-17] | References |
|---|---|---|---|
| 1. | *Clerodendrum serratum* Spreng. (Lamiaceae) | Anti-histamine, Anti-allergic activity, Cholinesterase like activity. | Gupta SS et al.[18] Modh PR & Gupta SS. [19] Sachdev KC et al. [20] |
| 2. | *Curcuma longa* L. (Zingiberaceae) | Anti-allergic activity. | Jain JP et al.[21] Tripathi RN et al.[22] |
| 3. | *Albizia lebbeck* (L.) Benth. (Mimosaceae) | Anti-anaphylactic activity. | Iyengar MA et al.[23] Tripathi RM et al.[24] Tripathi RM et al. [25] |
| 4. | *Acorus calamus* L. (Acoraceae) | Spasmolytic. | Prakash C. [26] Rajasekharan S et al. [27] Singh V. [28] |
| 5. | *Justicia adhatoda* L. (Acanthaceae) | Bronchodilatory, Spasmolytic, Anti-anaphylactic. | Wagner H. [29] |
| 6. | *Stramonium datura* Noronha. (Solanaceae) | Anti-cholinergic. | Robert F Doerge. [30] |
| 7. | *Ocimum sanctum* L. (Lamiaceae) | Antioxidant, Immunomodulatory, Spasmolytic. | Sharma R et al. [31] Singh S et al. [32] |
| 8 | *Terminalia bellirica* ( Gaertn. ) Roxb. (Combretaceae) | Antihistaminic, Bronchodilatory, Spasmolytic. | Trivedi VP et al. [33] |
| 9 | *Tinospora cordifolia* Miers (Menispermaceae) | Immunomodulatory, Spasmolytic, Anti-allergic. | Kulkarni K. [34] |
| 10. | *Terminalia chebula* Retz. (Combretaceae) | Spasmolytic, Spasmolytic. | Mehta HS. [35] |

| | | | |
|---|---|---|---|
| 11. | *Piper longum* L. (Piperaceae) | Spasmolytic, Immunostimulatory. | Dahanukar SA et al. [36] Fernades A et al. [37] Upadhay et al. [38] |
| 12. | *Glycyrrhiza glabra* L. (Leguminosae) | Spasmolytic, Anti-anaphylactic, Spasmolytic. | Gupta MB et al. [39] Homma M et al. [40] Mardikar BR. [41] |
| 13. | *Piper nigrum* L. (Piperaceae) | Antioxidant. | Kaid AA & Kulkarni PH. [42] Thirunavukkarasu S. [43] Virendra Singh. [44] |
| 14. | *Zingiber officinale* Rosc (Zingiberaceae) | Antioxidant. | Virendra Singh. [44] |
| 15. | *Solanum virginianum* L. (Solanaceae) | Histamine release inhibitory effects. | Bector N P & Puri A S. [45] Govindan S et al. [46] Gupta SS et al. [47] Gupta SS et al. [48] Iyengar MA et al. [49] Jain JP. [50] |
| 16. | *Syzygium aromaticum* ( L. ) Merr. & L.M.Perry (Myrtaceae) | Antioxidant, Radical scavenging activity, Histamine release inhibitory effect. | Akah PA et al. [51] Lee GI et al. [52] |
| 17. | *Hedychium spicatum* Sm. (Zingiberaceae) | Spasmolytic | Rajan A & Upadhyaya BN. [53] Sahu RB. [54] Shaw BP. [55] |
| 18. | *Cedrus deodara* ( Roxb. ex Lambert ) G.Don (Pinaceae) | Mast cell stabilizing activity. | Shinde UA et al. [56] |
| 19. | *Nardostachys grandiflora* DC. (Valerianaceae) | Spasmolytic, Bronchodilatory. | Gupta SS et al. [57] Gupta SS et al. [58] Gupta SS et al. [59] |
| 20. | *Picrorhiza kurroa* Royle ex Benth. (Scrophulariaceae) | Antioxidant, Free radical scavenging activity, Immunomodulatory, Spasmolytic. | Dorsch W et al. [60] Mahajani SS & Kulkarni RD. [61] Muller A et al. [62] |
| 21. | *Saussurea costus* (Falc.) Lipsch. (Asteraceae) | Bronchodilatory, Immunostimulant, Spasmolytic. | Raghavan P et al. [63] |
| 22. | *Trachyspermum ammi* Sprague (Apiaceae) | Antiaggregatory effects, Arachidonic acid metabolism platelets. | Srivastava KC. [64] |
| 23. | *Boswellia serrata* Roxb. (Burseraceae) | Reduces the activity of elastase enzyme, Anti-phlogistic activity, Immunomodulatory | Gupta I et al. [65] |
| 24. | *Tylophora indica* Merr. (Asclepiadaceae) | Immunomodulatory, Antioxidant, Antihistaminic. | Shivpuri DN et al. [66] Shivpuri DN et al. [67] Mathew KK, Shivpuri DN. [68] Thiruvengadam KV et al. [69] Gupta S et al. [70] |
| 25 | *Phyllanthus emblica* L. (Euphorbiaceae) | Spasmolytic, Anti-oxidant, Immunomodulatory. | Joseph E. Pizzorno. [71] |

**Table-1: List of Ayurvedic herbal drugs scientifically proven as Anti-asthmatic.**

countries about various agents from traditional system for the use in asthma.

Contrary to this, herbals or natural medicines are not being adopted by modern medical practitioners satisfactorily. The rationale behind use of these substances clinically has not emerged out. Lack of exact mechanism of action, unperceivable cause-effect relationship, poor quality-control parameter and insufficient pre-clinical & clinical data; make any herbal agent to be crucial for convincing scientific community for its use in clinic. This bias is also supported by some data show that results or hypothesis obtained at preclinical or very primary type of clinical level, are not reproducible & thus can't considered as reliable for therapeutic use. One systemic review for use of herbal medicines for asthma declares that no definitive evidence of any herbal medicine emerged out due to irrelevant randomized control trial [9]. This justifies the need to make substantial conclusion about rational use of herbals.

### *3.1 Ayurveda approach:*

Ayurveda approach being rational in the use of natural therapeutics, suggest unconventional way of herbal usage. The approach is based on subjective perceivable qualitative

perspectives of disease orientation & therapeutic agent, which is described as "*dravyaguna*" in ancient texts. Simply, it can be understood as set of different properties of matter (including symptoms of disease), adopted as to study aspects of substance, in old-age when physicochemical profiles of matter couldn't establish satisfactorily.

*Guna* is considered mutual contradictory by nature, and this mutual contradiction became ground for this differentiation. So in similar sense each disease is discriminated from another having variable expression of specific *guna.* Human body is considered to have all set of *guna* which are contradictory within body itself; compare to matter constitutes only one set of *guna* that is complimentary to set of guna present in another matter. According to Ayurveda disease occur only when over expression of any set of guna occur from existed contradictory guna in body.

Modification of disease symptoms can be possible, thus by just depleting over expression of certain set of *guna* from body. And hence matter available in nature, which is having complimentary set of *guna* to that, expressed one, can produce antagonistic action and work as therapeutic agent. So diet management, life-style management & herbal usage can became the ways to modify disease condition according to *guna* theory [10].

### *3.2 Additional therapeutical aspects of Ayurveda:*

Apart from above described approach for herbal usage, Ayurveda do have some additional therapeutic aspects for prevention and cure of bronchial asthma. Those include *sodhana chikitsa* (purification processes which eliminates vitiated dosha) collectively known as *panchkarma* process and *samana* process that pacifies *dosha* and gradually relives the disease for in whom *sodhana* processes are contraindicated. Diet is important aspect for asthma therapy and it is prescribed as should compatible with *dosha* aggravation and *prakruti.* Investigate specific allergen for recurrent exacerbation and avoid exposure to that allergen known as *satmyaseven* is also suggested as a part of therapy. Benefit of therapy greatly depends upon duration between onset of disease symptoms and starting treatment regimen. It has been also claimed that absolute terminal cure can be possible if certain criteria related to patient, medicines, and nursing care are satisfied. This claim is required to validate in modern context as no terminal or long lasting effect is possible by modern pharmacotherapeutics with available treatment regimen [72].

## 4. CONCLUSION AND FURTHER DIRECTION

Hundreds of herbal drugs are being screened at present for better therapeutic principles throughout world. Even though very less produce convincing answers for the use at clinical level. Complementary and alternative system of medicine (CAM) or traditional system of medicine like Ayurveda can serve sufficient in this regard to find out efficacious and safe herb as per as asthma like condition is concern. Disappointment can arise if concentration made only on phytoactives, irrespective to the way of herbal usage by Ayurveda like tradition. Traditional system may have unique and time tested approach for disease care carries better therapeutic sense [73,74]. Implementation of Ayurveda approach as a whole directly at clinical level is determined to demonstrate potential efficacy of Ayurveda therapy, which may became basis for justification of prescribed specifications employed with treatment. Designed case studies of therapy, involving Ayurvedic practitioners and researcher, may produce sure-shot outcomes with minimal cost, contrary to alone phytochemical research. Rational evaluation can emerges integrated approach of Ayurveda and medical science includes not only safety and efficacy with long lasting relief but also with lake of possible complications. It can also suggest whether significant possibility in it to generate improved quality of life. It will also help in providing systemic guidance to the patients want to adopt self-dependency by herbal usage concomitantly with modern medical treatment, particularly in asthma like disease.

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