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A REVIEW ON ANTIASTHMATIC ACTIVITY OF TRADITIONAL MEDICINAL PLANTS

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ABSTRACT: Plants have played an important role as various medicinal agents since ages. Medicinal herbs have been used in one form or another, under indigenous systems of medicine like Ayurveda, Siddha and Unani. The knowledge of Indian medicinal plants and their uses in the Ayurvedic and Unani system of medicine have led to many scientific investigations and researches throughout the world. Asthma is a common disease that is rising in prevalence worldwide with the highest prevalence in industrialized countries. Asthma affects about 155 million people worldwidse and it has been estimated that is further 100 million will be affected by 2025. It has affected 14-15 million people in the United States, including estimated 4.8 million childhoods. It accounts for about 11 million hospital visits annually and the sixth most frequent reason for visits in ambulatory setting. It the past decades research has been focused on scientific evaluation of traditional drugs of pant origin for the treatment of various diseases. Since the time immemorial, various herbs are used as antiasthmatic with efficient therapeutic response. India has about 45,000 plant species and among them several thousand are claimed to possess medicinal properties.

INTRODUCTION: Asthma is a disease of the lung's airways. It affects 155 million individuals in the world.

Its Prevalence and severity among children have increased significantly in the world over the past 40 year.

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It varies from 5–30 percent in different population [1, 2]. It has affected 14–15 million people in the United States, including estimated 4.8 million children. It is the most common chronic disease of childhood. It accounts for about 11 million hospital visits annually and the sixth most frequent reason for visits in ambulatory setting.

About 4, 70,000 patients are hospitalized and more than 5,000 patients die annually due to asthma [3]. Asthma closely correlates with the description of the disease "Tamak Shwasa" recorded thousands years ago by the sages and eminent scholars of Ayurveda [4].

Bronchial asthma is a chronic respiratory disorder affecting a large proportion of population throughout the world [5]. The plant is referred to as 'Jivanti' in Ayurvedic text and considered to be Rasayana (tonic) drug and is thus used to vitalize, nourish and rejuvenate the body [6]. Ethno medicinally the leaves and seeds are used in asthma and cough [7]. The major therapeutic claim is its galactogogue action, which has been proved in rats [8] along with the antimicrobial [9], anticarcinogenic [10] and hepatoprotective properties of plant [12, 13] in traditional system of medicine leaves of *L. reticulata* (Retz) Wight & Arn are mainly used for the treatment of cough, asthma, rheumatism [8, 14]. Many asthma attacks are triggered by allergens, such as dust, mould spores, mites, animal hair or feathers but the onset may equally be caused by cold air, or it may be preceded by an infection such as a cold. Certainly, stress and more specifically acute anxiety are known to be the immediate trigger for many attacks, and this can sometimes give rise to a vicious circle of asthma - anxiety about the asthma - further attacks. Thus a wide range of etiological factors can be involved in this all too common problem [15].

A number of different groupings can be applied:

- **Extrinsic asthma** - caused by allergic responses to house dust, animal fur, or various foods. Such causes 10-20% of adult asthma.

- **Intrinsic asthma** - caused by genetics, structural problems, infections, pollutants and stress - both physiological and psychological. Such causes 30-50% of adult asthma. The symptoms of people with asthma differ greatly in frequency and degree. Some have an occasional episode that is mild and brief; otherwise they are symptom free. Others have mild coughing and wheezing much of the time, punctuated by severe exacerbation's of symptoms following exposure to known allergies, viral infections, and exercise or nonspecific irritants. A series of stages have been characterized for describing the severity of an acute asthma attack:

1. **Mild:** Mild dyspnoea; diffuse wheezes; adequate air exchange.

2. **Moderate:** Respiratory distress at rest; hypernea, use of accessory muscles; marked wheezes.

3. **Severe:** Marked respiratory distress; cyanosis; use of accessory muscles; marked wheezes or absent breath sounds.

4. **Respiratory failure:** Severe respiratory distress; lethargy; confusion; prominent pulsus paradoxus. Use of accessory muscles [16, 17].

Medicinal Plants used in asthma: Asthma is a global problem. Many synthetic drugs are used to treat acute symptoms of asthma, but they are not completely safe for long term use. Hence search has been started once again to look back to traditional medicine which can be used to treat asthma. Some traditional plants with antiasthmatic potential are discussed in **table 1**.

TABLE 1: LIST OF MEDICINAL PLANTS USED IN ASTHMA [1-122]

S. No.	Plant Name	Plant part used	Mechanism of action
1.	*Abutilon crispum (L.) Medicus.*	Leaves	Antiasthmatic
2.	*Abutilon indicum (L.) Sweet.*	Seed	Antiasthmatic
3.	*Aerva lanta Linn*	Aerial parts	Antiasthmatic
4.	*Acalypha indica*	Leaves, roots, stalk and flowers	Bronchodialator
5.	*Achillea mellifolium*	flowers	Bronchodilator, Mast cell stabilizer
6.	*Acorus alamus*	Rhizome	Mast cell stabilizer
7.	*Ailanthus excels*	Leaves	Antiasthmatic, Antiallergic
8.	*Achyranthes aspera, Allium cepa*	Fruit	Mast cell stabilizer
9.	*Ageratum conyzoides L*	Leaves	Antiasthmatic

10.	*Adhatoda vasica Nees*	Bulb	Mast cell stabilizer, Lipoxygenase inhibitor, PAF inhibitor, COX inhibitor
11.	*Albizzia Lebbeck*	Bark	Bronchodilator Mast cell stabilizer
12.	*Asystasia Gangetica*	Leaves	Bronchodilator Anti-inflammatory
13.	*Ammi visnaga*	Seeds	Bronchodilator
14.	*Amburana cearensis*	Bark	Bronchodilator
15.	*Allium cepa Linn.*	Bulbs/Juice	Mast cell stabilizer,
16.	*Alstonia scholaris R. Br.*	Leaves	Bronchodilator
17.	*Aquillaria agallocha Roxb.*	Stem	Mast cell stabilizer & Antiallergic
18.	*Argemone Mexicana*	Stem	Bronchodilator
19.	*Aristolochia indica L*	Roots	Bronchodilator
20.	*Asclepias curassavica L*	Roots	Antiasthmatic
21.	*Asystasia gangetica*	Leaves	Antiasthmatic
22.	*Atropa belladonna*	Seeds	Asthma, Bronchitis, Muscuar Pain
23.	*Azadirachta indica A. Juss*	Leaves	Mast cell stabilizer
24.	*Azima tetracantha Lam*	Leaves	Mast cell stabilizer
25.	*Bacopa monniera Linn.*	Leaves	Mast cell stabilizer
26.	*Balanites roxburghii*	Stem bark	Bronchodilator, Mast cell stabilizer
27.	*Benincasa hispida (Thunb.) Cogn.*	Fruits	Bronchodilator
28.	*Boerhaavia diffusa Linn.*	Root	Asthma, Bronchitis
29.	*Brassica camperstris Linn.*	Seed	Bronchodilator
30.	*Biophytum nervifolium Thw*	Leaves	Mast cell stabilizer
31.	*Cassia absus L*	Leaves	Bronchodilator
32.	*Casuarina equisetofolia Linn*	Bark	Antiasthmatic
33.	*Cedrus deodara*	Wood	Mast cell stabilizer
34.	*Cnidium monnieri*	Leaves	Bronchodilator
35.	*Curculigo Orchioides*	Rhizomes	Antihistaminic Anti-inflammatory
36.	*Centipeda minima*	Whole plant	Mast cell stabilizer
37.	*Clerodendron phlomidis*	Leaves	Antihistaminic, Mast cell stabilizer
38.	*Casuarina equisetifolia Linn*	Wood, Bark	Antiasthmatic
39.	*Chlorophytum laxum R. Br.*	Tuber	Antiasthmatic
40.	*Cissus quadrangularis L*	Stem	Antiasthmatic
41.	*Clematis smilacifolia Wall*	Leaves	Antiasthmatic
42.	*Clerodendrum serratum Linn*	Roots	Antiasthmatic
43.	*Coccinia grandis (L.) Voigt*	Tuber	Antiasthmatic
44.	*Cynodon dactylon*	Whole Plant	Antiasthmatic
45.	*Calotropis procera (Ait) R.Br.*	Latex	Mast cell stabilizer & Anti-inflammatory
46.	*Cassia tora Linn.*	Seeds	Mast cell stabilizer
47.	*Clerodendron serratum Linn. Moon.*	Stem bark	Bronchodilator, Mast cell stabilizer
48.	*Cuminum cyminum Linn.*	Roots	Bronchodilator
49.	*Curcuma longa Linn.*	Rhizome	Mast cell stabilizer, Antiallergic & Anti Inflammatory
50.	*Cynodon dactylon Pers.*	Rhizome	Mast cell stabilizer
51.	*Cassia sophera*	Leaves	Bronchodilator, Antihistaminic
52.	*Dendrophthoe falcate L. f.*	Bark	Antiasthmatic
53.	*Desmodium gangeticum*	Roots	Cough, Asthma, Vomitting
54.	*Dhatura metel Linn.*	Whole Plant	Asthma
55.	*Elaeocarpus sphaericus K. Schum*	Fruits	Bronchodilator
56.	*Ephedra gerardiana*	Stem	Bronchodilator

57.	*Eclipta alba Linn*	Leaves	Antiasthmatic
58.	*Emblica officinalis*	Fruits	Asthma, Bronchitis
59.	*Euphorbia hirta*	Aerial parts	Antiasthmatic
60.	*Ficus bengalensis Linn*	Bark	Antiasthmatic
61.	*Ficus exasperate Yahl*	Root	Bronchodilator
62.	*Ficus racemosa Linn.*	Latex	Antiasthmatic
63.	*Glycyrrhiza glabra*	Roots	Antihistaminic, Antiallergic
64.	*Hemidesmus Indicus R.Br.*	Roots	Antiasthmatic
65.	*Inula racemosa Hook. F.*	Roots	Mast cell stabilizer & Antiallergic
66.	*Labisia Pumila*	Leaf	Antiasthmatic
67.	*Leptadenia Reticulata*	Leaves and Roots	Cough and AsthmaS
68.	*Lepidium sativum Linn.*	Seeds	Bronchodilator
69.	*Lannea coromandelica Merr*	Whole Plant	Antiasthmatic
70.	*Leucas aspera (Willd.) Link*	Leaves	Antiasthmatic
71.	*Mangifera indica Linn.*	Seed & Bark	Asthma
72.	*Manilkara hexandra Dubard.*	Leaves	Antiasthmatic
73.	*Mimosa pudica L*	Leaves	Antiasthmatic
74.	*Mentha spicata Linn. Emend. Nethh.*	Leaves	Leaves Mast cell stabilizer
75.	*Momordica dioica Roxb. Ex Wild.*	Bulb	Mast cell stabilizer, Antiallergic
76.	*Moringa oleifera*	Seed	Bronchodilator
77.	*Mucuna pruriens*	Seed	AntiasthmaticS
78.	*Myrica esculenta Buch-Ham*	Stem bark	Mast cell stabilizer, Bronchodilator
79.	*Nigella sativa*	Seed	Bronchodilator
80.	*Nyctanthes arbortristis Linn.*	Stem bark	Mast cell stabilizer, Bronchodilator
81.	*Ocimum sanctum*	Leaves	Mast cell stabilizer
82.	*Ocimum tenuiflorum Linn*	Leaves	Antiasthmatic
83.	*Ocimum sanctum*	Leaf	Bronchitis, Cough
84.	*Olea*	Ripe Fruits	Antiasthmatic
85.	*Orthosiphon rubicundus Benth*	Leaves	Antiasthmatic
86.	*Oxalis corniculata L*	Whole Plant	Antiasthmatic
87.	*Passiflora incarnate*	Leaves	Bronchodilator & Histmine
88.	*Paederia foetida*	Leaves	Bronchodilator
89.	*Phaseolus radiates*	Seed	Asthma, Chronic Bronchitis
90.	*Physidis angulata Linn*	Leaves	Mast cell stabilizer
91.	*Phymatodes scolopendria*	Aerial parts	Bronchodilator
92.	*Piper betel Linn*	Leaves	Bronchodilator
93.	*Pinus roxburghii*	Whole Plant	Asthma, Chronic Bronchitis
94.	*Piper nigrum Linn.*	Fruits	Bronchodilator
95.	*Picorrhiza kurroa*	Roots	Mast cell stabilizer, Bronchodilator
96.	*Polygala elongataWilld*	Roots	Mast cell stabilizer
97.	*Portulaca quadrifida L*	Whole Plant	Mast cell stabilizer
98.	*Premna obtusifolia*	Roots	Asthma, Bronchitis
99.	*Punica granatum Linn.*	Seed	Asthma, Cough
100.	*Rauvolfia serpentina (L.) Benth.ex*	Whole Plant	Bronchodilator
101.	*Rivea hypocratoriformis Choisy.*	Leaves	Mast cell stabilizer
102.	*Sansevieria roxburghiana Schult.*	Leaves	Antiasthmatic
103.	*Semecarpus ancardium*	Fruits	Asthma, Cough
104.	*Solanum nigrum Linn.*	Roots	Mast cell stabilizer

105.	*Solanum surattense Burm.f*	Whole Plant	Asthma, Bronchospasm
106.	*Spondias pinnata Linn.f*	Seeds	Antiasthmatic
107.	*Solanum xXanhocarpum*	Roots	Mast cell stabilizer
108.	*Sphaeranthus indicus Linn.*	Flowers	Mast cell stabilizer
109.	*Striga orobanchioides Benth*	Whole Plant	Mast cell stabilizer, Antihistamine
110.	*Swertia Chirata*	Leaves	Bronchial asthma
111.	*Tamarindus indica*	Leaves	Bronchodilator, Antihistaminic, Anti-inflammatory
112.	*Taxus baccata Linn.*	Leaf	Asthma, Bronchitis
113.	*Tephrosia purpuria*	Aerial parts	Mast cell stabilizer, Bronchodilator
114.	*Terminalia belerica*	Leaf galls	Asthma
115.	*Terminalia chebula Retz.*	Fruits	Mast cell stabilizer & Antiallergic
116.	*Tinospora cardifolia Wild Mier ex Hook f.*	Stem	Mast cell stabilizer
117.	*Trachyspermum ammi*	Fruits	Asthma
118.	*Tylophora asthmatica (L.f.) Wight & Arn.*	Leaves	Mast cell stabilizer & Anti inflammatory
119.	*Vitex negundo L.*	Leaves	Bronchodilator, Antiallergic & Mast cell stabilizer
120.	*Zanthoxylem rhetsa (Roxb.) DC*	Fruit	Antiasthmatic
121.	*Zingiber capitatum Roxb*	Rhizomes	Antiasthmatic
122.	*Zingiber officinale Thw*	Rhizomes	Antiasthmatic

CONCLUSION: All the traditional medicinal plants discussed in the review have exhibited significant clinical and pharmacological activity. Some medicinal plants alternatives employed in these traditions are proven to provide symptomatic relief and assist in the inhibition of disease development as well asthma caused by dust, mites, pollen, exercise or even by air, which produce mucus, saline, pain on breathing or unusual breathing. It is basically diagnosed by some synthetic and remedies like cough drops, and *Glycyrrhiza glabra* etc. the review reveled that to many of medicinal plants used by traditionally as antiasthmatic agent are reported to have scientific evidence. All the natural products discussed in this review exhibit antiasthmatic activities.

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