


**REVIEW: HERBALS AS BRONCHODILATOR**

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<p><b>*For Correspondence:</b> Department of Pharmaceutics, MET's Institute of Pharmacy, Adgaon, Nashik, 422003. Savitribai Phule Pune University, Pune (Maharashtra), India.</p>	<p><b>ABSTRACT</b> Respiratory disease is common and significant caused of illness and death around the world. Plants have played important role as various medicinal agents. The most common problems of the respiratory system in asthma, bronchitis, common cold, coughed and whooping cough. Bronchodilators have a role, although rather minor, in the treatment of cough. Bronchodilators represent the standard of care in the treatment of airway obstruction associated with asthma or (chronic obstructive pulmonary disease) COPD. The people are depending on the indigenous plant resources to treat various respiratory disorders. Bronchodilator activity of several traditional medicinal plants discussed in the review has been widely studies for its clinical, phytochemical and pharmacological activities. Medicinal herbs have been used in one form or another. Some medicinal plants are various activities like bronchodilator, antimicrobial, antioxidant, expectorant, antibacterial, antifungal, hepatoprotective, antitussive, anti-inflammatory and antiulcer, antiviral, anti-tubercular. Medicinal plants have been playing an important essential role in the development of human culture. Respiratory disorders like asthma affect about 300 million people worldwide and it has been estimated that a further 100 million will be affected by 2025. The global respiratory tract infection treatment market was valued at US\$ 34,276.8 Mn in 2016, and is expected to reach US\$ 59,957.3 Mn by 2025 expanding at a CAGR of 6.2% from 2017 to 2025. A many species belonging different family used to treat respiratory disorders. All the natural products discussed in this review exhibit bronchodilator activities and asthma.</p> <p><b>KEY WORDS:</b> Respiratory disease, Medicinal plants, Bronchodilator activity, Pharmacological activity, global respiratory tract infection.</p>
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**INTRODUCTION**

**R**espiratory disease is common and significant caused of illness and death around the world. Respiratory conditions are the most frequent reasons for hospital stays among children. The most common problems of the respiratory system are asthma, bronchitis, common cold, coughed and whooping cough. The people are depending on the indigenous plant resources to treat various respiratory disorders. Herbal remedies for treatment of respiratory disorders are common practice in the many parts of the world. [1]. The global respiratory tract infection treatment market was valued at US\$ 34,276.8 Mn in 2016, and is expected to reach US\$ 59,957.3 Mn by 2025 expanding at a CAGR of 6.2% from 2017 to 2025[3]. Definition: "Bronchodilator is substance that dilates the bronchi and bronchioles, decreasing resistance in the respiratory airway and increasing airflow to the lungs".Bronchodilators naturally present within our body, or they may be taken as medication for treatment of breathing difficulties. It is useful in obstructive lung diseases, in asthma and chronic obstructive pulmonary disease are the most common conditions. Short-acting

medications provide quick or "rescue" relief from acute bronchoconstriction and Long-acting bronchodilators help to the control and prevent symptoms [4]. Bronchodilators have a role, although rather minor, in the treatment of cough. Bronchodilators represent the standard of care in the treatment of airway obstruction associated with asthma or (chronic obstructive pulmonary disease) COPD. Studies of bronchodilators in various types of acute and chronic pathologic cough are to be required [2]. It is use treat long term condition;

**Asthma:** It is common condition in lungs caused to inflammation of the airways. Chronic obstructive pulmonary disease (COPD): A lung disease usually caused by smoking which causes to blockage of the airways, they can be partially reversed with treatment [5]. Some of many medicinal plants used to treat the respiratory diseases and their application [6]. Respiratory disorders like asthma affect about 300 million people worldwide and it has been estimated that a further 100 million people will be affected by 2025. A many species belonging different family used to treat respiratory disorders [1]. Plants are used in respiratory disease *Adhatoda vasica* (Acanthaceae), *Acalypha indica* (Euphorbiaceae), *Albizia lebbek* (Fabaceae), *Asystasia gangetica* (Acanthaceae), *Abrus precatorius* (Fabaceae), *Amburana cearensis* (Legumes), *Alstonia scholaris* (Apocynaceae), *Argemone mexicana* (Poppies), *Aristolochia indica* (Birthwort), *Benincasa hispida* (Cucurbitaceae), *Tylophora indica* (Dogbanes) . The Climatic conditions as well as limited health care facilities. The people are depending on the indigenous plant resources to treatment the various respiratory disorders. Many herbal plants used for the treatment of respiratory disorders are common in many parts of the world [7].

**ADHATODA VASICA:** *Adhatoda vasica*, are also known as Malabar nut tree belonging to family (Acanthaceae). parts of plant used leaves, roots, young plant present in contain quinazoline alkaloid are vasicine, 7- hydroxyvasicine, vasicinolone, 3deoxyvasicine, vasicol, vasicoline, vasicolinone, triterpenes, anisotine and main constituents is vasicine, vasicinone responsible for bronchodilator activity and other is expectorant, anti-tussive, wound healing, antimicrobial, anti-inflammatory. It is a common small evergreen, sub-herbaceous distributed in India, especially in the lower Himalayas (up to 1300 meters above sea level), India, Sri Lanka, Burma and Malaysia. In Ayurveda, the ancient system of Indian medicine it is commonly known as *vasaca*, plant is indigenous system of medicine [8]. Extracted from the various solvent use methanol, aqueous, ether, chloroform [9].



Fig 1. ADHATODA VASICA [9]

**ABRUS PRECATORIUS:** It's commonly known as jequirity, Crab's eye, rosary pea, precatory pea or bean, is a slender, belonging to family (Fabaceae). Parts of plant used as Leaves, roots and seeds. Vine originally native to India now commonly found throughout the tropical and subtropical parts of the world. Plant Seeds are collected in July month at Tamilnadu, Shankrankovil in the southern region. They are highly attractive seeds are sought after by children for beads. Phytochemical constituent' sareabrusoside E, abrusgenic acid, and other known compounds such as cycloartenol, gallic acid and glycyrrhizin it is responsible for anti-helminthic, anti-oxidant, anti-diarrhoeal, anti-emetic and inhibits

intestinal motility. Traditional used of plant for management of asthma and evaluation of bronchodilator activity. Plant extracted from ethanol solvent [10].



Fig 2. ABRUS PRECATORIUS [10]

**ACALYPHA INDICA:** Also known as *Acalypha canescens*, belonging to family (Euphorbiaceae). Parts of plant used to whole plant are leaf, stem, seeds, root, flower, and unstated part. Plant cultivated in south Africa, India, Asia, and Kenya. Phytochemical constituents in plant species Fatty acid and volatile oil. plant extracted from various solvent is diethyl ether, ethyl acetate, chloroform, acetone, ethanol, methanol, water and mixed solvent, petroleum ether, hexane. Major phytochemical properties found in plant are high antibacterial properties. Pharmacokinetic study for oral administration is responsible for therapeutic activities such as hepatoprotective, anti-cancer, anti-hyperlipidemic, analgesic, anti-estrogenic activity, and anti-inflammatory as a reaction with the internal body system [11].



Fig 3. ACALYPHA INDICA [11]

**ALSTONIA SCHOLARIS:** Also known as *Alstoniascholaris* (Linn.) Belonging to family (Apocynaceae). It is locally called chhatim it is used of plant parts is leaves and strongly perfumed flowers. It is cultivated from Pakistan as ornamental. It contain Indolealkaloid, Iridoids and Terpenoids are responsible for mucolytic, expectorant, antitussive, bronchodilators, and hypertension. Plant parts extracted from ethanol solvent. They are effect of extract on carbachol induced respiratory and cardiovascular changes and other is tracheal, gut tissues from rabbit and guinea pig to potential bronchodilator and antagonistic effects of the extract on carbachol induced hypertension and bradycardia [12].



Fig 4. ALSTONIA SCOLARIS [13]

**BENINCASA HISPIDA:** It's also known as benincasahispida (Thumb.) belonging to family (cucurbitaceae). Used of plant parts is seed, fruit, roots and seed oil. cultivated to native Malaysia and fruits is cultivated in india, Burma, and ceylan.It contain glucose, fructose, roots- pentacyclitriterpene, bryonolic acid, fruits- vitamin, glucose, adenine, histidine and seeds- ethylidene cholesterol-7 enol,dienol.Contain responsible bronchodilator, anti-ulcer, anti-oxidant, anti-pyretic, anti-diarrheal. Extracted solvent methanol, petroleum ether, ethyl acetate [14].



Fig 5. BENINCASA HISPIDA [15]

**ALBIZIA LEBBECK:** It's also known as Albizialebeck (L.) Benth.Belongingto family (fabaceae). It is cultivated in North and South America. In India and Pakistan, the tree is used to produce timber (16). Bark is used of the plant in extracted ethanol solvent or aqueous. Contain in plant extract alkaloid, flavonoid, tannins, saponins, carbohydrate, phenol, antraquinones are responsible for strong bronchodilator effect, anti-inflammatory, anti-oxidant, anti-diabetic, hepatoprotective activity, antifungal [17].



Fig 6. ALBIZZIA LEBBECK [16]

**ARGEMONE MEXICANA:** It also known as Mexican poppy, belonging to family (Papaveraceae). Cultivated in Premathandu in Tamil, India, United States, Bangladesh and Ethiopia. Parts of plant used leaf, stem, roots, and flowers. Extracted in methanol and water. Its contain present in extract are phenol, terpenoids, alkaloid, steroid, flavonoid, protein, amino acid, saponon, glycosides and resins. It

responsible from Analgesic, anti-inflammatory, anti-oxidant, asthma, malaria, dropsy, bronchitis, bio-insecticides and skin diseases [18].



Fig 7. ARGEMONE MEXICANA [19]

**CHYRANTHES ASPERA:** *Achyranthes aspera* L. It is known as “Prickly chaff flower” in English and “Chirchita”, “Onga”, “Latjeera” or “Apamarga” belonging to family (Amaranthaceae). They are cultivated in It is commonly found in India, Baluchistan, Sri Lanka, tropical Asia, Africa, Australia, and America. Parts of plant used are leaf, flower, and seed. Extracted in ethanol, methanol, petroleum ether extract. It contains present in plant extract are alkaloids, flavonoids, saponins, steroids and terpenoids. Its responsible for astringent, digestive, diuretic, laxative, purgative and stomachic [20].



Fig 8. ACHYRANTHES ASPERA [21]

## CONCLUSION

Bronchodilator activity of several traditional medicinal plants discussed in the review has been widely studied for its clinical, phytochemical and pharmacological activities. Its effect mainly on bronchodilator activity on cough. It is mainly an important source of Alkaloids responsible for bronchodilator activity. In this review some plant species are pharmacological studies have been like bronchodilator, antimicrobial, antioxidant, expectorant, antibacterial, antifungal, hepatoprotective, antitussive, anti-inflammatory and antiulcer, antiviral, antitubercular. All the natural products discussed in this review exhibit bronchodilator activities and asthma.

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