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## TRADITIONAL MEDICINAL PLANTS USED FOR THE TREATMENT OF RESPIRATORY PROBLEMS IN INDIA: A REVIEW

Sweta Thakur <sup>\*1</sup> and Kuljinder Kaur <sup>2</sup>

Department of Biology <sup>1</sup>, Teens Claz, 168/A Maria Arcade 3rd Floor, 1st Block Kormangala - 560034, Karnataka, India.

Department of Botany <sup>2</sup>, Government College, Hoshiarpur - 146001, Punjab, India.

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### Correspondence to Author:

**Sweta Thakur**

Academician,  
Teens Claz, 168/A Maria Arcade 3rd  
Floor, 1st Block Kormangala - 560034,  
Karnataka, India

**E-mail:** shbthkr@gmail.com

**ABSTRACT:** Respiratory system is one of the vital systems of the body which is affected negatively by air pollutants, viral and bacterial infections. These infections can lead to several chronic diseases. Modern medicines can help treat these diseases, but they have several side effects that can further lead to other health-related troubles. In India, many people still use herbal remedies to treat mild infections as first aid. Traditional healers or vaidis still use these herbal medicines to treat severe respiratory problems such as asthma, tuberculosis, whooping cough, *etc.* This review aimed to gather information about medicinal plants used to treat various respiratory problems in different areas of India. Relevant data about various ethnobotanical studies conducted in various country states were extracted from published literature and analyzed. Two hundred thirty-nine plant species belonging to 193 genera and 80 families were. The maximum number of plant species belonged to the family Asteraceae. *Solanum* was the genus with the maximum number of species. All plant parts, including roots, stem, rhizome, leaves, flowers, fruits, seeds, bark, whole plant, and aerial parts, were used in various herbal preparations. People are now well aware of the benefits of using herbal medicines. The present review will provide first-hand information to explore phytochemicals and pharmacological studies.

**INTRODUCTION:** Respiratory system in a human being consists of a pair of lungs and a tube system that connects the sites of oxygen and carbon dioxide exchange with the external environment. The lungs are likely to be affected by a wide range of disorders or diseases that are caused by various harmful pollutants in the air. Thus, we can say that air quality directly affects the respiratory health of all living beings.

If a significant amount of harmful inhaled pollutants reaches the blood circulation through the lungs, then it can cause damage to various vital organs and systems <sup>1</sup>. Hence, we can say that if respiratory problems are not treated well in time, it may lead to serious chronic diseases. The most common respiratory system problems are asthma, bronchitis, chronic obstructive pulmonary disease (COPD), common cold, cough, occupational lung diseases, pulmonary hypertension, tuberculosis, whooping cough, *etc.* <sup>2, 3</sup>. The occurrence and severity of various respiratory diseases remain high in developed and developing nations.

It is one of the four major contributors to mortality and morbidity in developed nations that results in high cost of health and loss in productivity <sup>4</sup>. There

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are several different causes of respiratory diseases. They may be caused by pathogenic viruses reported in different seasons among the different countries of the world <sup>5</sup>. Moreover, respiratory tract infections which are caused by bacteria, remain a major cause of chronic diseases and death in both developed and developing nations <sup>6</sup>. In 2000, pneumonia and influenza were reported as the cause of 120 deaths per million men and 76 deaths per million women worldwide for the 15 to 59 age group <sup>7</sup>. The easy availability of different antibiotics, preferably recommended by physicians, wrong assumptions by them, the demand of the public for fast relief from diseases, and certain other human behaviours, including patient satisfaction, directly related to the overuse of antibiotics that may even cause some negative impacts on the body directly or indirectly <sup>8</sup>.

Excess antibiotic use has resulted in increased resistance among the pathogens to common antibiotics <sup>9</sup>. Traditional medicine, especially obtained from the processing of medicinal herbs, has a long history of serving people worldwide. In many countries, direct or indirect use of medicinal plants for the treatment of various illnesses and disorders is still followed by traditional or local healers <sup>10</sup>.

However, knowledge of medicinal plants is rapidly vanishing under the influence of Western lifestyles. The fewer traditional healers and lack of interest of the younger generations to carry on this valuable information is also impacting this <sup>11</sup>. In India, there is good knowledge of traditional medicinal plants among the local healers and vaidas residing in remote villages. In this review, the plant species of ethnomedicinal importance used by the local healers or indigenous people in different regions to treat various respiratory problems were reviewed and analyzed.

**METHODS:** For the present review, various published articles reporting ethnomedicinal or ethnobotanical utilization of plant species in different states or regions of India were considered. For data collection, different online platforms such as Science Direct, Scopus, PubMed, Research Gate, and Academia were searched. Rather than concentrating on published matters on respiratory diseases, data was collected from ethnomedicinal folklore studies in different states or regions of India to treat various human ailments. This paper provides information not only on the botanical name of the plants from the research articles but their names were updated using "The plant list" database. The table also listed different local or vernacular names of plants in different regions of the country. In addition, the table also depicts their family, part used for herbal preparation, method of use, and source. A literature search was performed using the following key terms: India/ Indian medicinal plants/ ethnobotanical/ ethnomedicinal/ ethnopharmaceutical study for medicinal plants, Traditional medicinal herbs/ plants, Indigenous plants, Plants/ Herbal/ Medicine/ Remedies, Folk Medicine/Folk remedies, names of states of India. Data from review articles, historical documents, experimental studies, or non-open access articles were excluded.

**RESULT:** In India, many plants are used in traditional remedies to cure respiratory problems, especially in common ailments such as cold, cough, asthma, *etc.* In this article, the data on medicinal plants used to treat respiratory diseases were collected and analyzed. The present review indicated that various communities around the country are utilizing a variety of medicinal plants to treat respiratory diseases.

**TABLE 1: MEDICINAL PLANTS USED FOR THE TREATMENT OF VARIOUS RESPIRATORY DISEASES IN DIFFERENT REGIONS OR STATES OF INDIA**

S. no.	Botanical name of plants	Local name	Family	Part used	Method of use	Reference
1.	<i>Abrus precatorius</i> L.	Gurivinda; Gulaganji	Fabaceae	Leaf	Fresh leaves are taken twice a day to cure bronchitis and cough	[22]
2.	<i>Abutilon indicum</i> G. Don.	Thuthi	Malvaceae	Flower	Flower paste is given to treat asthma.	[23]
3.	<i>Acacia caesia</i> (L) Willd.	Indu	Fabaceae	Whole plant	Juice of whole plant is given in cough and cold	[23]
4.	<i>Acacia leucophloea</i> Willd.	Reunja	Fabaceae	Flower, Root	Flower and root are used in asthma	[24]
5.	<i>Acalypha indica</i> L.	Kuppintaku;	Euphorbiaceae	Whole	15 to 20 ml of whole plant extract is	[22]; [25]

		Kuppigida		plant; Leaf	used in one week to cure asthma. 10 ml of the leaf juice is taken twice a day for 5 days against bronchitis	
6.	<i>Achillea millefolium</i> L.	Bhutkesi; Fye; Chabu; Shugumentog	Asteraceae	Whole part; Leaf;	Juice of whole plant is used to treat respiratory infection. Paste made from leaves used for treating cold, cough.	[26]; [27]; [28]
7.	<i>Achyranthes aspera</i> L.	Uttereni; Uttarani; Andhi jhara; Latjeera; Putkanda, Uwang	Amaranthaceae	Whole plant; Root; Leaf	One week, 1.5 g of whole dry ash powder with honey is given to cure cold and cough. The powder of root and black pepper should be taken with water to cure the asthma. Leaf extract is taken for treat cough. Plant used in herbal bath for children suffering from cold. Root juice is given in asthma	[22]; [29]; [30]; [31]
8.	<i>Achyranthes bidentata</i> Bl.	Putkanda	Amaranthaceae	Whole plant	Decoction is given in whooping cough	[27]
9.	<i>Aconitum heterophyllum</i> Wall. ex Royle	Bonga, Atees, Boa	Ranunculaceae	Root	Root is used to treat cold and cough	[28]
10.	<i>Aconitum violaceum</i> Jacq. ex Stapf	Dudatees, Jhimba	Ranunculaceae	Root	Root is used for the treatment of cough	[28]
11.	<i>Acorus calamus</i> L.	Bach; Barin; Nag Russ	Araceae	Rhizome	Fresh rhizome is inhaled in common cold as anti-allergic and small pieces if chewed on an empty stomach helps in curing asthma. Decoction made to cure cold and cough. Rhizome is useful in bronchitis	[33]; [27]; [33]; [34]
12.	<i>Aegle marmelos</i> (L.) Correa	Bael	Rutaceae	Fruit	Fruits are burnt and inhaled to treat asthma	[35]
13.	<i>Aerva lanata</i> Juss. ex Schult.	Dayalu; Kannu peelai	Amaranthaceae	Flower; Leaf; Root	5 ml juice of flowers with leaves is taken for one month to treat asthma. Leaves paste is given in asthma. Root decoction is given in cold.	[36]; [23]
14.	<i>Aeschynomene aspera</i> L.	Solo	Fabaceae	Aerial part	Aerial part juice is given to cure cough and cold	[37]
15.	<i>Aesculus indica</i> (Wall ex Camb.) Hook.f.	Ban Khor, Khori	Sapindaceae	Leaf	Extract of the leaves is used against whooping cough	[33]
16.	<i>Agrimonia pilosa</i> Ledeb.	Kanaula	Rosaceae	Root	Root used in the treatment of cough, cold	[27]
17.	<i>Ainsliuea lutifolia</i> (D. Don) Schulz-Bip.	Karhu	Asteraceae	Root	Root juice administered in pneumonia.	[31]
18.	<i>Albizia lebbek</i> (Linn.) Benth.	Sirisa	Fabaceae	Stem bark	The decoction of stem bark is used to relief from asthma. The decoction is used in a dose of 50ml thrice a day for 6 week before food.	[38]
19.	<i>Allium cepa</i> L.	Ulligadda; Piaj	Amaryllidaceae	Bulb	10-15 ml of bulb extract with honey is given in the morning for 21 days to cure asthma. Juice prepared from bulb is taken to treat cough and asthma. Burned onion and ginger is taken along with flower of <i>Plumeria rubra</i> to cure cough and cold.	[22]; [30]; [39]
20.	<i>Allium sativum</i> L.	Vellulli; Lahsun	Amaryllidaceae	Bulb; Leaf	2 to 3 garlic cloves with salt given at night for 3 days to cure cough. Juice mixed with honey taken orally cures coughs, asthma, and abdominal pain. Extract of bulb mixed with mustard oil is applied to chest, throat in case of cough and other chest complaints.	[22]; [32]; [40]
21.	<i>Alpinia galanga</i> (L.) Willd	Sugandhamula	Zingiberaceae	Rhizome	The dried rhizome powder is taken with warm water twice or thrice a day for two week after meal to cure asthma.	[38]
22.	<i>Alstonia scholaris</i> L.	Satpara	Apocynaceae	Bark	Bark is used to treat asthma, bronchitis and pneumonia.	[41]
23.	<i>Alternanthera philoxeroides</i> (Mart.) Grises	Ghoda madaranga	Amaranthaceae	Stem	Young shoot paste with black pepper is prescribed to cure acute cough	[37]
24.	<i>Alysicarpus vaginalis</i> DC.	Chevra	Fabaceae	Root	Decoction of root is taken early in the	[33]

25.	<i>Anaphalis contorta</i> (D. Don) Hk.	Telgang	Asteraceae	Whole plant	morning for curing cough. Whole plant is used in cold and cough.	[28]
26.	<i>Andrograhis paniculata</i> (Burm. f.) Nees	Kal-megh	Acanthaceae	Whole plant	Decoction is given in cough and common cold.	[27]
27.	<i>Angelica glauca</i> Edgew.	Chora	Apiaceae	Root	Roots are powdered and taken orally with water twice a day in bronchitis.	[32]
28.	<i>Annona squamosa</i> L.	Aatha	Annonaceae	Fruit	Fruit is edible and is effective in the treatment of tuberculosis.	[42]
29.	<i>Areca catechu</i> L.	Supari	Arecaceae	Fruit	Fruit is directly taken to treat cough.	[30]
30.	<i>Argemone mexicana</i> L.		Papaveraceae	Seed	Seed oil is beneficial in asthma.	[43]
31.	<i>Aristolochia indica</i> L.		Aristolochiaceae	Leaf	The leaf juice (10 ml) is given twice a day for 5 days against bronchitis.	[25]
32.	<i>Arnebia benthami</i> (Wall. Ex. G. Don) Johnston.	Kazuban	Boraginaceae	Root	Root powder is given in fever, cough and cold along with honey. The roots are added to tea and that tea is given to persons having pneumonia.	[34]
33.	<i>Artemisia flaccidus</i> Bunge	Lugmig Chunwa	Asteraceae	Flower; Leaf	Plant parts are used in pulmonary infections.	[28]
34.	<i>Artemisia indamellus</i> Grierson		Asteraceae	Root	Roots are used to treat cough.	[28]
35.	<i>Artemisia nilagirica</i> (C. Clarke) Pamp.	Kattukarpuram	Asteraceae	Leaf, Flower	Inhalation of smoke from leaves and flowering twigs is effective in the treatment of asthma and bronchitis.	[42]
36.	<i>Asparagus racemosus</i> L.	Satabari	Asparagaceae	Root	Roots are used in throat infections, tuberculosis and cough.	[44]
37.	<i>Asteracantha longifolia</i> (L.) Nees.	Neer mulli	Acanthaceae	Root	Root decoction is given in cough and cold.	[23]
38.	<i>Azadirachta indica</i> A. Juss.	Neem	Meliaceae	Leaf	Fresh leaves are consumed during cough and cold.	[45]
39.	<i>Azima tetraacantha</i> Lamk.	Sangilai	Salvadoraceae	Leaf	Leaf paste is given in cough and cold.	[23]
40.	<i>Bacopa monnieri</i> (L.) Pennell	Bramhi	Scrophulariaceae	Leaf	Leaf decoction is administered to the babies suffering from asthma. Leaves kept on a cotton cloth are warmed gently on the flame and applied on the chest of patient suffering from cough, cold and different types of nasal congestion. The dried plant powder is given internally in the treatment of asthma.	[37]; [42]
41.	<i>Barleria cristata</i> L.	Jhinti, Bajardanti	Acanthaceae	Root, Leaf	Leaves and roots infusion is used in cough.	[33]
42.	<i>Barleria prionitis</i> L.	Katsarria	Acanthaceae	Leaf	Decoction of its leaf and use it with pure honey take 2-3 times daily to treat whooping cough.	[29]
43.	<i>Bauhinia acuminata</i> L.	Chingthrao angouba	Fabaceae	Bark, Leaves	Decoction of bark or leaves is useful in asthma.	[40]
44.	<i>Begonia roxburghii</i> A. DC.	Payan	Begoniaceae	Leaf	Decoction of leaves is taken in cough.	[35]
45.	<i>Berberis lycium</i> Royle	Kshambal	Berberidaceae	Root	Roots are boiled in water and this decoction mixed with honey is taken orally in cough and cold.	[32]; [26]
46.	<i>Bergenia ciliata</i> Stein.	Zakhm e hayat	Saxifragaceae	Root	Root is used against pulmonary infections.	[33]
47.	<i>Betula utilis</i> D. Don.	Bhuz	Betulaceae	Bark	The decoction of the bark is given in cough.	[34]
48.	<i>Bidens biternata</i> (Lonn.) Merr.	Sainguna	Asteraceae	Whole plant	Decoction of the whole plant is used in cold.	[31]
49.	<i>Bidens pilosa</i> L.	Kumber	Asteraceae	Whole plant	Infusion of whole plant is taken for cough relive.	[33]
50.	<i>Boerhavia diffusa</i> L.	Punarnava, Lal dodal	Nyctaginaceae	Root	Root is used to cure asthma.	[33]
51.	<i>Bombax ceiba</i> L.	Semal	Malvaceae	Root	Ashes of root is mixed with water and taken in cough.	[27]
52.	<i>Caesalpinia bonduc</i> (L.) Roxb.		Fabaceae	Root bark	The root bark has been used for relieving cough	[27]
53.	<i>Caesulia axillaris</i> Roxb.	Jamjuria	Asteraceae	Whole	Whole plant paste with camphor and	[37]

				plant	mustard oil is applied on chest and throat to cure cold, cough and nasal congestion.	
54.	<i>Cajanus cajan</i> (L.)	Arhar	Fabaceae	Leaf	Paste prepared from leaf is taken in cough.	[30]
55.	<i>Calotropis procera</i> L.	Jelledu; Akk	Apocynaceae	Bark; Flower	4 g root bark powder with honey is taken twice a day for 2 to 3 days for all types of cough. Powdered flowers along with honey are given in cough and asthmatic problems.	[22]; [33]
56.	<i>Caltha palustris</i> L.	Tatnu	Ranunculaceae	Root; Stem	Aqueous extract of root and shoot is used in cough.	[34]
57.	<i>Cannabis sativa</i> L.	Bhang; Bang	Cannabaceae	Seed; Bark; Stem	Plant is used to treat bronchitis, cough and cold.	[28]
58.	<i>Capparis spinosa</i> L.	Baferu	Capparaceae	Root	Root extract administered thrice a day in asthma.	[31]
59.	<i>Carum carvi</i> L.	Gonyorog, Gonyod, Shingu Jeera, Gsyon	Apiaceae	Whole plant; Seed	Plant parts are used in cold, cough.	[28]
60.	<i>Carum roxburghianum</i> Benth.	Omam	Apiaceae	Leaf	Leaf powder is given in cold.	[23]
61.	<i>Cassia javanica</i> L.	Kondrai	Fabaceae	Root	Root decoction is given in asthma.	[23]
62.	<i>Centella asiatica</i> L.	Brahmi; Thalkudi	Plantaginaceae	Stem; Leaf	Stem powder is used to treat asthma and bronchitis. Plant decoction mixed with cow milk in 1:5 ratio is taken for 15 days against asthma. Leaf juice with cow milk is taken empty stomach for treating cough and cold.	[41]; [25]; [37]; [44]
63.	<i>Centipeda minima</i> (L.) A. Br. & Asch.	Nakchinka	Asteraceae	Leaf	Dried leaf powder with mustard oil is inhaled to remove nasal congestion.	[37]
64.	<i>Cerastium cerastoides</i> (L.) Britton Mem		Caryophyllaceae	Whole plant	Whole plant is used for the treatment of cough.	[28]
65.	<i>Cinnamomum verum</i> J. Presl	Dalchini; Edanal karappa	Lauraceae	Bark; Leaf	Decoction of bark is taken to treat asthma. Boiled leaf extract is given in cough, bark given in cold. Root bark is given in powder form with milk or sugar for cough.	[35]; [40]; [42]
66.	<i>Cissampelos pareira</i> L. var. <i>hirsuta</i> (Burch.- Ham.ex DC.) Forman		Menispermaceae	Root; Leaf	Powdered root and leaves mixed with <i>Zingiber officinale</i> juice and honey (each 5 ml) is administered twice daily for 5 days against dry cough.	[25]
67.	<i>Citrullus colocynthis</i> Schrader.	Varithum matti	Cucurbitaceae	Fruit	Fruit juice is given in cold.	[23]
68.	<i>Clematis gouriana</i> Roxb.	Eruvalli	Ranunculaceae	Root	Smoke obtained by burning the root is inhaled against cough.	[42]
69.	<i>Clerodendron phlomoidis</i> L.	Thazhut haalai	Verbenaceae	Leaf	Leaf juice is given in cold.	[23]
70.	<i>Coccinia indica</i> (L.) Voigt.	Kovai	Cucurbitaceae	Rhizome	Rhizome juice is given in asthma.	[23]
71.	<i>Colebrookea oppositifolia</i> Smith	Kala bansa	Lamiaceae	Leaf	Leaf ash with honey in asthma.	[31]
72.	<i>Coriandrum sativum</i> L.	Kothimeera	Apiaceae	Aerial parts	50 ml of plant extract is taken twice a week for 3 weeks to cure asthma.	[22]
73.	<i>Costus speciosus</i> (J. Koenig) Sm	Keo	Zingiberaceae	Rhizome	Rhizome juice is used for cold, cough and asthma.	[45]; [30]
74.	<i>Crepidium acuminatum</i> (D. Don) Szlach.		Orchidaceae	Leaf	Leaf juice mixed with honey given to cure bronchitis.	[27]
75.	<i>Curcuma longa</i> L.	Haladi; Halud	Zingiberaceae	Rhizome	Licking one teaspoon of turmeric along with ½ tsp of honey gives comfort from congestion of bronchi. Blend turmeric powder, banana ash and barley powder in same proportions with honey and this paste is given 4-5 times in a day to treat phlegm. Turmeric powder,	[38]; [22]; [30]

					ghee and black pepper powder is mixed and paste is rubbed on chest and throat to reduce inflammation of the bronchioles. Turmeric is burnt until purple hot and smoke is inhaled. The smoke serves as a robust expectorant. A small piece of turmeric is boiled in milk and old jaggery is added for the treatment of allergies. Paste of rhizome is taken in cough.	
76.	<i>Cynodon dactylon</i> L.	Garike Hullu; Arugan	Poaceae	Leaf	50 to 100 ml of leaf juice is taken twice a day for 5 days to cure asthma.	[22]; [23]
77.	<i>Cynoglossum lanceolatum</i> Forssk.		Boraginaceae	Whole plant	Plant is used to treat cold, cough.	[28]
78.	<i>Cynoglossum zeylanicum</i> (Vahl) Brand		Boraginaceae	Leaf; Root	Infusion taken in asthma, cough	[27]
79.	<i>Dactylorhiza hatagirea</i> D. Don	Hath panja; Salampanja	Orchidaceae	Tuber	The powder is taken orally with lukewarm water twice a day for chronic cold, cough.	[32]; [28]
80.	<i>Datura innoxia</i> Mill.		Solanaceae	Leaf, Seed, Fruit	The plant is used internally in the treatment of asthma.	[27]
81.	<i>Datura stramonium</i> L.	Datura	Solanaceae	Seed, Leaf	Seeds and leaves are used as anti asthamatic	[41]
82.	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	Gaschotta; Amburus	Loranthaceae	Root; Leaf	Decoction of leaf and root is taken in cough.	[35]
83.	<i>Desmodium triflorum</i> (L.) Dc.	Kudaliya	Fabaceae	Whole plant	The fresh juice of the plant is given to children for cough. It also used in cough, bronchitis.	[43]
84.	<i>Dicliptera roxburghiana</i> Nees	Sonde, Jonk-jarhi	Acanthaceae	Root	A pinch of ash obtained by burning the roots of this plant with the twigs of <i>Barleria cristata</i> L. and <i>Callicarpa macrophylla</i> Vahl applied on tonsils in whooping cough.	[31]
85.	<i>Drymaria cordata</i> Edgew. & Hk.		Caryophyllaceae	Whole plant	Decoction of whole plant is used in asthma, cold.	[27]
86.	<i>Echinops echinatus</i> Roxb.	Utakanta	Asteraceae	Whole plant	Plant is used in cough.	[43]
87.	<i>Eclipta prostrata</i> (L.) L.	Potralai	Asteraceae	Whole plant; Leaf	The extract of the whole plant is mixed with honey and taken orally to treat cough. Leaf juice is given in asthma and cold.	[46]; [23]
88.	<i>Elaeagnus parvifolia</i> Wall. ex Royle		Elaeagnaceae	Fruit; Aerial part; Leaf; Seed	Plant is used to treat cough, bronchitis.	[28]
89.	<i>Enydra fluctuans</i> Lour.	Hidimichi	Asteraceae	Leaf	Paste of leaves coated with warm mustard oil is applied on chest to cure bronchitis.	[37]
90.	<i>Erigeron alpinus</i> L.	Bashakar	Asteraceae	Aerial parts	Aerial parts are given in cough and cold.	[28]
91.	<i>Eryngium foetidum</i> L.	Neilei, Makikom, Bangmaroi	Apiaceae	Root	Decoction of root is given in cough.	[47]
92.	<i>Erythrina indica</i> (Lam).	Kalyana Murungai	Fabaceae	Leaf	Leaf decoction is given in cold and asthma.	[23]
93.	<i>Eucalyptus tereticornis</i> (Smith).	Thylamaram	Myrtaceae	Leaf	Steam of leaves is inhaled in cough, cold and dry cough.	[23]
94.	<i>Euphorbia hirta</i> L.	Halina gada; Dudhali; Jatli dodal; Chithra paalaadai	Euphorbiaceae	Whole plant; Leaf	20 ml of whole plant extract with a little salt is given twice a day for one week to treat asthma. The juice is applied in asthma problem. Juice/latex of the plant is given in cough (in small quantity); decoction of the plant is given in bronchial infections and asthma. Leaf paste is given in asthma.	[22]; [32]; [33]; [23]
95.	<i>Euphorbia neriiifolia</i> L.	Shairapul,	Euphorbiaceae	Whole	Decoction of whole plant is taken in	[35]

96.	<i>Euphorbia pilosa</i> L.	Shibgach	Euphorbiaceae	plant Whole plant	pneumonia. Whole plant is used for breathing disorders including asthma, bronchitis and chest congestion	[27]
97.	<i>Euphorbia stracheyi</i> Boiss.		Euphorbiaceae	Whole plant	Powder plant given in the treatment of cold, cough.	[27]
98.	<i>Euphorbia thymifolia</i> L.	Dudhi	Euphorbiaceae	Stem	Warm the stem and take the juice to treat asthma.	[29]
99.	<i>Evolvulus alsinoides</i> Linn.	Phooli	Convolvulaceae	Leaf	Leaves are smoked in chronic bronchitis and asthma.	[48]
100.	<i>Feronia elephantum</i> Corr.	Vilaa	Rutaceae	Leaf	Leaves paste is given in cold and juice is given in cough.	[23]
101.	<i>Ficus palmata</i> Forssk.	Kamri	Moraceae	Fruit	Fruit is considered useful in the diseases of lungs.	[33]
102.	<i>Ficus racemosa</i> L.	Attimara	Moraceae	Fruits	2-3 fresh fruits are eaten with honey twice a day for one week to cure asthma	[22]
103.	<i>Ficus religiosa</i> L.	Peepal; Aswatha; Arasu	Moraceae	Bark; Fruit	The bark is powdered and taken with water for curing asthma. Dried fruits pulverized and taken with water to cures asthma.	[32]; [44]; [23]
104.	<i>Flemingia semialata</i> Roxb.		Fabaceae	Leaf	Leaf decoction given in the treatment of tuberculosis.	[27]
105.	<i>Garuga pinnata</i> Roxb.		Burseraceae	Leaf	Leaf juice mixed with 2-3 ml leaf juice of <i>Justicia adhatoda</i> and honey (2 ml) is given twice a day for 2 weeks to treat asthma.	[25]
106.	<i>Gaultheria trichophylla</i> Royle		Ericaceae	Leaf	Infusion of leaves is taken in cough and cold.	[27]
107.	<i>Gentiana carinata</i> Griseb.		Gentianaceae	Whole plant	Powdered plant is given in the treatment of cold, cough.	[27]
108.	<i>Gentiana kurroo</i> Royle		Gentianaceae	Root	Roots are used to treat cough.	[28]
109.	<i>Gentianella moorcroftiana</i> (Wall.ex G.Don) Airy Shaw	Ticta	Gentianaceae	Aerial part	Aerial parts are used to treat cough.	[28]
110.	<i>Geranium pratense</i> L.	Porlo	Geraniaceae	Aerial part	Aerial parts are used to treat cough.	[28]
111.	<i>Glycyrrhiza glabra</i> L.	Sirisha	Fabaceae	Root	Regular intake of liquorice root tea combined with ginger is treasured in bronchial asthma, bronchial and irritation (not more than 2-3 cups per day).	[38]
112.	<i>Gossypium hirsutum</i> L.	Balukanda	Malvaceae	Root, Fruit	Root and fruit is crushed together and taken to treat cough.	[39]
113.	<i>Grewia tenax</i> (Forsk.) Fiori.	Gangren	Tiliaceae	Fruit	Decoction of the fruit is used to cure asthma, cough.	[48]
114.	<i>Cleome gynandra</i> L. (Synonym <i>Gynandropsis pentaphylla</i> DC.)	Nalla velai	Cleomaceae	Flower	Flower juice is given in cough and cold.	[23]
115.	<i>Hedychium spicatum</i> Buch-Ham ex Sm	Gandhasunthi; Kapurkachri	Zingiberaceae	Rhizome	10 g of powdered rhizome is used in bronchial asthma. The powder of rhizomes is mixed with hot water and used to treat cough, asthma.	[38]; [26]
116.	<i>Helicteris isora</i> L.	Edampiri valampiri	Sterculiaceae	Fruit	Dried fruit powder with fruit powder of <i>Phyllanthus emblica</i> is used internally in the treatment of cough.	[42]
117.	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.		Apocynaceae	Root	The root-bark hot infusion with milk and sugar is a good alternative tonic especially for children in cases of chronic cough.	[43]
118.	<i>Hibiscus rosa-sinensis</i> L.		Malvaceae	Root	Root extract used to treat cough and fever.	[49]
119.	<i>Elaeagnus rhamnoides</i> (L.) A.Nelson (Synonym <i>Hippophae rhamnoides</i> L.)	Gartsak; Tirkug; Chharma; Sarla	Elaeagnaceae	Whole plant	Plant is used to treat cough and lung disease.	[28]
120.	<i>Hiptage benghalensis</i> (L.) Kurz.		Malpighiaceae	Flower, Bark	Dried flowers (50 gm) and dried bark (50 gm) are made in to a fine powder. The 5-6 gm powder is given twice daily	[50]

					along with a glass of cow milk on empty stomach to treat tuberculosis for 40 days.	
121.	<i>Homalonema aromatica</i> (Spreng.) Schott		Araceae	Stem	Stem cooked and consumed as vegetable for cough.	[45]
122.	<i>Hygrophila auriculata</i> Heine.	Neermulli chedi; Vayal chulli	Acanthaceae	Root, Leaf	Root decoction is given in cough, cold and asthma. Root or leaf decoction is used to treat cough.	[23]; [42]
123.	<i>Hyoscyamus niger</i> L.	Bazerbangh	Solanaceae	Whole plant	Plant is used to treat asthma and whooping cough.	[28]
124.	<i>Iberis amara</i> L.		Brassicaceae	Seed	Seeds are used in asthma and bronchitis.	[43]
125.	<i>Indigofera tinctoria</i> L.	Neel	Fabaceae	Whole plant	Extract of the plant is given in bronchitis.	[33]
126.	<i>Inula racemosa</i> Hk.	Mano, Kuth Manurucha	Asteraceae	Root	Roots are used to treat asthma.	[28]
127.	<i>Justicia adhatoda</i> L. (Synonym <i>Adhatoda zeylanica</i> L.)	Vasanga; Arusa, Vasaka, Adusage	Acanthaceae	Leaf	Decoction of leaf of <i>Justicia adhatoda</i> works as a bronchodilator, appearing as a respiration stimulant to help respiration issues. The leaves are ground with the flowers of <i>Hibiscus rosa-sinensis</i> and taken orally to treat asthma. Juice of leaves is mixed with hot water and used to treat cough, asthma and cold. 10 ml of leaf extract with jaggery is given twice a day for 15 days to cure asthma	[38]; [24]; [32]; [26], [22]
128.	<i>Lagotis kunawurensis</i> (Royle ex Benth.) Rupr.		Selaginaceae	Leaf	Leaf is used to treat cough and cold.	[28]
129.	<i>Lawsonia inermis</i> L.	Mylanchi	Lythraceae	Leaf	Leaf extract is used for the treatment of bronchitis.	[42]
130.	<i>Leucas aspera</i> (Willd.) Spreng.	Thumba	Lamiaceae	Root; Flower	Root decoction is used in bronchial diseases. Mixed with honey, flowers are used for cough and cold.	[42]; [43]
131.	<i>Leucas cephalotes</i> (Roxb.) Spreng		Lamiaceae	Flower	Syrup from flowers used for cough and cold.	[43]
132.	<i>Lippia nodiflora</i> Mich.	Poduthalai	Verbenaceae	Leaf	Leaves paste is given in asthma.	[23]
133.	<i>Lonicera spinosa</i> (Jacq. ex Decne) Walp.	Bhakhru	Caprifoliaceae	Aerial Parts; Stem	Plant is used to treat asthma.	[28]
134.	<i>Madhuca indica</i> J. Gmelin.	Mahula	Sapotaceae	Flower	Flower decoction (20 ml.) is taken twice daily for about 2 weeks for treatment of asthma.	[51]
135.	<i>Malva sylvestris</i> L.		Malvaceae		Flowers and immature fruits are used for whooping cough.	[43]
136.	<i>Malva verticillata</i> L.		Malvaceae	Root	Root is used for whooping cough.	[43]
137.	<i>Maranta arundinacea</i> L.	Koova	Marantaceae	Rhizome	Rhizome powder along with milk is used in the treatment of urinary complaints and asthma.	[42]
138.	<i>Marsdenia roylei</i> Wt.		Apocynaceae	Whole plant	Decoction of whole plant is given in cold	[27]
139.	<i>Medicago lupulina</i> L.	Gunyok	Fabaceae	Aerial part	Aerial part are used to treat pneumonia	[28]
140.	<i>Melastoma malabathricum</i> L.	Lutki	Melastomataceae	Leaf	Leaves are crushed, made into pallets and taken in asthma.	[35]
141.	<i>Meriandra dianthera</i> (Roth ex Roem. & Schult.) Briq	Heluk, Aluk Buan, Tamik	Lamiaceae	Leaf	Decoction of leaf is given in cough.	[47]
142.	<i>Mimosa pudica</i> L.	Lajjaboti; Thotta sinungi; Thottavadi	Fabaceae	Leaf	Leaves are crushed and paste is rubbed to treat asthma. Plant juice mixed with coconut milk is used internally for asthma.	[35]; [23]; [42]
143.	<i>Mimusops elengi</i> L.	Sapota	Sapotaceae	Seed	Seeds powder is given in cough and cold.	[23]
144.	<i>Monochoria vaginalis</i> (Burm. f.) Presl.	Mirmira	Pontederiaceae	Leaf	Leaves with ginger juice and honey are taken to cure cough and cold.	[37]
145.	<i>Moringa oleifera</i> Lam.	Mungna	Moringaceae	Leaf	The leaf juice is taken to cure cold.	[39]



146.	<i>Mukia maderaspatana</i> L. Roenar	Musum usukkai	Cucurbitaceae	Root	Root powder is given in cough.	[23]
147.	<i>Murdannia nudiflora</i> Gaertn.		Commelinaceae	Root	Root paste with goat milk is prescribed orally to cure asthma.	[37]
148.	<i>Murraya koenigii</i> L.	Karibevu; Karuvae ppillai	Rutaceae	Leaf	100 ml of boiled leaves with jaggery, ginger is taken twice a day for 3 days to cure cough and cold.	[22]; [23]
149.	<i>Myrica esculenta</i> Buch.- Ham. ex D.Don	Kaphal	Myricaceae	Bark	Bark is useful for cough, asthma, sinusitis and chronic bronchitis.	[32]
150.	<i>Nasturtium officinale</i> R. Br.	Choo	Brassicaceae	Whole plant, Leaf	Plant extract is helpful in dry throat and asthma. Boiled leaves are given to cure old cough.	[33]
151.	<i>Nepeta discolor</i> Royle ex Benth.		Lamiaceae	Whole plant	Whole plant is used to treat cold, cough.	[28]
152.	<i>Nepeta glutinosa</i> Benth.		Lamiaceae	Whole plant	Whole plant is used to treat pneumonia.	[28]
153.	<i>Nyctanthes arbor-tristis</i> L.		Oleaceae	Leaf	Juice of young leaves is mixed with honey and hot cow milk and given to children twice daily for 2 weeks in case of bronchitis, asthma and whooping cough.	[45]
154.	<i>Ocimum americanum</i> L.	Nayithulasi	Lamiaceae	Leaf	50 ml leaf decoction is given twice a day to cure cough.	[22]; [43]
155.	<i>Ocimum basilicum</i> L.	Kamakasturi; M'pheu, Mayangton; Urithira sadai	Lamiaceae	Leaf	10-15 ml of leaf extract is given to cure whooping cough. Leaf juice is given in cough.	[22]; [47]; [23]
156.	<i>Ocimum canum</i> Sims.	Kanchankorai	Lamiaceae	Leaf	Leaves juice is given in cough and cold.	[23]
157.	<i>Ocimum sanctum</i> L.	Tulsi	Lamiaceae	Leaf	Decoction made up of <i>Trchyspermum</i> spp. (ajwain), <i>Ocimum sanctum</i> (tulsi), <i>Piper longum</i> (pepper), and <i>Zingiber officinale</i> (ginger) is beneficial natural expectorant. Tulsi is beneficial inside the remedy of respiration device disorders. A decoction of the leaves, with honey and ginger is an effective remedy for bronchitis, allergies, influenza, cough and cold. A decoction of the leaves, cloves and common salt also offers instant comfort in case of influenza. They should be boiled in 1/2 a litre of water until most effective half the water is left and upload then taken. It facilitates to mobilize mucus in bronchitis and asthma. Fresh leaves of tulsi, momordica, acalypha are crushed and prepared pills, daily 2 pills are given for one week to cure asthma.	[38]; [22]; [30]
158.	<i>Ocimum tenuiflorum</i> L.	Tulsi	Lamiaceae	Leaf; Whole plant	Decoction of whole plant is used to treat cough and pneumonia.	[35]
159.	<i>Oldenlandia umbellata</i> L.	Inbura	Rubiaceae	Root	Root decoction is given in cough and cold.	[23]
160.	<i>Olea ferruginea</i> Royle.	Kaow	Oleaceae	Leaf	Leaves are considered useful in whooping cough.	[33]
161.	<i>Opuntia elatior</i> Mill.		Cactaceae	Fruit	The baked fruit is given in whooping cough.	[43]
162.	<i>Origanum vulgare</i> L.	Ban Tulsi; Lamay masha, Massow	Lamiaceae	Root, Oil; Leaf, Flowering stem; Aerial parts	The root is powdered and taken to cure tuberculosis. Its oil is given in cough and bronchitis. Infusion of leaves and flowering stem taken internally to treat cold.	[32]; [27]; [28]
163.	<i>Oroxylum indicum</i> (L.) Vent.		Bignoniaceae	Bark	Stem bark paste is taken orally for tuberculosis.	[52]

164.	<i>Oxalis corniculata</i> L.	Umjarhi holmuli	Oxalidaceae	Leaf	Leaf is given with honey in cough.	[31]
165.	<i>Pedicularis pectinata</i> Wall.ex Benth.		Scrophulariaceae	Whole plant	Plant is used to treat cold and cough.	[28]
166.	<i>Peganum harmala</i> Linn.	Harmal, Gandhiyo	Zygophyllaceae	Whole plant	The inhalation of the smoke of the plant is useful in asthma.	[48]
167.	<i>Pergularia daemia</i> L.	Kuratiga	Apocynaceae	Leaf	Fresh leaves, garlic cloves, <i>Euphorbia tirucalli</i> young buds are crushed and prepared daily, one pill for one week to cure bronchitis.	[22]
168.	<i>Phlogacanthus thyrsoiflorus</i> Nees	Nongmengkha, Khimpui, Rakhu	Acanthaceae	Leaves	The leaf juice is taken as syrup for cough, cold and bronchial asthma. Decoction of leaves is taken in cold.	[45]; [47]
169.	<i>Phlomis bracteosa</i> Royle ex Benth.	Neel Trath	Lamiaceae	Leaf	Powdered leaves are mixed in tea and used against cough and cold.	[34]
170.	<i>Phyllanthus emblica</i> L. (Synonym <i>Emblica officinalis</i> Gaertn.)	Rampholochi, Mantalousi, Talouthai, Amla	Phyllanthaceae	Fruit, Seed	Crush some amount of fruits and mix with little honey and given before and after food for the treatment of dry cough and asthma. Powdered seed are given to asthmatic and bronchitis patients. Fruit roasted in wood fire or hot ash eaten for cough cure. Dried fruits with honey taken in cold and cough.	[53]; [47], [33]
171.	<i>Picrorhiza kurrooa</i> Royle ex Benth.	Karru	Scrophulariaceae	Leaf	Decoction of dry leaves is taken orally once a day for cold and cough.	[32]
172.	<i>Pimpinella diversifolia</i> DC.		Apiaceae	Whole plant; Root	Powdered roots cure cold and cough.	[27]; [28]
173.	<i>Piper longum</i> L.	Pippali	Piperaceae	Fruit	Half or one gram of its dried powder of seed ought to be taken two times a day with Jaggery after food. It helps in relief of asthma.	[38]
174.	<i>Piper nigrum</i> L.	Kurumulaku	Piperaceae	Seed, Leaf	Seeds and leaves are used as decoction in the treatment of cough and cold.	[42]
175.	<i>Pistacia integerrima</i> L.	Kakrasingi, Kakare, Kangar; Kakra	Anacardiaceae	Gall	Galls are used in asthma, cough, phthisis, and other diseases of the respiratory tract. Decoction is used as to cure asthma, chronic pulmonary affection. The powder of gall is administered in asthma.	[32]; [27]; [33]; [31]
176.	<i>Plumeria rubra</i> L.	Nisanphula	Apocynaceae	Bark, Flower	The decoction of bark is taken against cold and cough. For cough twenty one flowers are grounded with burnt ginger, garlic and onion and taken orally.	[39]
177.	<i>Polygonum persicaria</i> L.	Maslooni	Polygonaceae	Whole plant	Boiled herb drink with milk is taken in cold and cough conditions.	[33]
178.	<i>Polygonum vacciniifolium</i> Wall. ex Meissn		Polygonaceae	Root, Leaf	Root and leaves are used to treat tuberculosis.	[28]
179.	<i>Pongamia pinnata</i> L.	Batti	Fabaceae	Leaf	10 ml of fresh leaf juice with black pepper is given twice a day for 3 days to cure cough.	[22]
180.	<i>Punica granatum</i>	Dalimb	Punicaceae	Leaf	5g of dry leaf powder twice a day for 3 days to cure dry cough	[22]
181.	<i>Ranunculus arvensis</i> L.	Khatholi	Ranunculaceae	Whole plant	Herb is used in asthma. Especially boiled herb is taken with fresh butter.	[33]
182.	<i>Rauwolfia tetraphylla</i> L.		Apocynaceae	Bark	Decoction of stembark with black <i>Piper nigrum</i> is given twice a day for 7 days against pneumonia.	[25]
183.	<i>Rhodiola heterodonta</i> (Hk. & Th.) A. Boriss.	Churupa	Crassulaceae	Aerial part	It is used to treat cough and lung infection.	[28]
184.	<i>Rhododendron anthopogon</i> D. Don	Balu; Shutenger	Ericaceae	Leaf	Leaves are used to treat bronchitis, cold, cough.	[28]; [34]
185.	<i>Rhododendron arboreum</i> Sm.	Burans	Ericaceae	Flower	Juice of dried flowers is used to treat cough, cold.	[26]
186.	<i>Rhododendron</i>	Nichni,	Ericaceae	Leaf	Leaves are mixed with tobacco and	[34]

187.	<i>campanulatum</i> D. Don <i>Rotala rotundifolia</i> (Roxb.) Koehne	Shutengar Panilatkan	Lythraceae	Aerial part	used as snuff to cure cold. Juice of aerial part of the plant is given to cure cough and cold.	[37]
188.	<i>Rubus ellipticus</i> Sm.	Anehhu, Hinsalu, Aakhe	Rosaceae	Fruit	Fresh juice of fruits is used to treat fever and cough.	[26]
189.	<i>Salvia moorcroftiana</i> Wallich Ex. Benth.	Gaddo	Lamiaceae	Root	Roots are used in cold and cough.	[34]
190.	<i>Salvia nubicola</i> Wall.		Lamiaceae	Leaf, Root	Decoction given in the treatment of cold and cough.	[27]
191.	<i>Sansevieria roxburghiana</i> Schult.	Marul	Asparagaceae	Leaf	Leaves decoction is given in cough and cold.	[23]
192.	<i>Saussurea albescens</i> Hook. f & Thomson	Bacha-Shang, Drapada, Prabachi	Asteraceae	Leaf	Leaves are used to treat bronchitis.	[28]
193.	<i>Saussurea costus</i> (Decne.) Sch.- Bip.	Kuth	Asteraceae	Root	Roots are given in the treatment of asthma, bronchitis.	[28]
194.	<i>Saussurea gnaphalodes</i> (Royle) Sch.- Bip		Asteraceae	Whole plant	Plant is used to treating cough and cold.	[28]
195.	<i>Senna auriculata</i> (L.) Roxb. (Synonym <i>Cassia</i> <i>auriculata</i> L.)	Tarawa	Fabaceae	Root	Root paste is used in asthma.	[24]
196.	<i>Senna occidentalis</i> (L.) Link (Synonym <i>Cassia</i> <i>occidentalis</i> L.)	Ponnamthakara	Fabaceae	Root, Leaf	A decoction made from roots and leaves is used to treat asthma and cough.	[42]
197.	<i>Senna tora</i> (L.) Roxb. (Synonym <i>Cassia tora</i> L.)	Pawand	Fabaceae	Seed	The powder of its seeds with hot water takes to relief for cough.	[29]
198.	<i>Sida acuta</i> Burm. f.	Kurumthotti	Malvaceae	Root	Root decoction is used for breathing problems and cough.	[42]
199.	<i>Silene vulgaris</i> (Moench) Garcke	Gandoli	Caryophyllaceae	Infloresce nce	It is used to treat bronchitis, asthma.	[28]
200.	<i>Sinopodophyllum</i> <i>hexandrum</i> (Royle) T.S.Ying	Ban Kakri; Omoshey; Braburchoi; Pindiyali	Podopyllaceae	Root; Whole plant	Decoction of root is taken to cure asthma. Whole plant is used to treat cough, tuberculosis.	[27]; [28]
201.	<i>Solanum anguivi</i> Lam.	Katukchi, Kukhasi, Khunathai	Solanaceae	Fruit	Fruit is eaten as raw in cough.	[47]
202.	<i>Solanum indicum</i> L.	Dengabhegi; Kanderi	Solanaceae	Leaf; Fruit	It is a major ingredient of natural cough syrup containing 11 herbal elements together with <i>Solanum indicum</i> , <i>Ocimum sanctum</i> , <i>Curcuma longa</i> , <i>Adhatoda vasica</i> , <i>Piper cubeba</i> , <i>Aloe</i> <i>barbadensis</i> etc., could be very efficient in thinning of bronchial secretion in instances of acute bacterial tracheobronchitis. Decoction of its leaves is helpful for cough and cold. Decoction of fruit is taken in asthma.	[38]; [32]; [27]
203.	<i>Solanum torvum</i> L.	Sundai	Solanaceae	Leaf	Leaves powder is given in cough, cold and asthma.	[23]
204.	<i>Solanum trilobatum</i> L.	Thoothuvalai	Solanaceae	Leaf	Leaves paste is given in cough and cold.	[23]
205.	<i>Solanum viarum</i> Dunal	Chhapakmol	Solanaceae	Seed	Seed powder with honey employed in cough.	[31]
206.	<i>Solanum violaceum</i> Ortega	Puthari chunda	Solanaceae	Seed	Seeds are used for the preparation of oil used in the case of cough and bronchial diseases.	[42]
207.	<i>Solanum virginianum</i> L.	Bheji-Baigana; Kandakari chunda	Solanaceae	Whole plant, root, Fruit; Seed	1-3 gm powder and 40-80 ml of decoction are some of the dosages of the plant (dose depends upon the condition of patient). Fruits are used by tribal people to cure asthma. Fruits are fried with "desi ghee" and given to patient for relief of asthma. Fresh-root juice is mixed in pure honey and taken	[38]; [50]; [42]

					internally on an empty stomach to treat asthma. Plant decoction is used along with pepper powder to treat cough.	
208.	<i>Sonchus arvensis</i> L.	Sochal	Asteraceae	Root	Roots used in cough, asthma, bronchitis and whooping cough.	[33]
209.	<i>Sonchus oleraceus</i> L.		Asteraceae	Root	A tea made from the roots is used in the treatment of asthma and cough.	[27]
210.	<i>Sonchus wightianus</i> DC.		Asteraceae	Leaf; Latex; Root	Plant is used to treat cough, bronchitis, asthma.	[28]
211.	<i>Sorbaria tomentosa</i> (Lindl.) Rehder	Kamyat	Rosaceae	Fruit; Stem	Fruit and stem is used to treat asthma.	[28]
212.	<i>Sorbus aucuparia</i> L.		Rosaceae	Fruit	Fruits are used to treat cough and cold.	[28]
213.	<i>Spilanthes acmella</i> (L.) L.	Akarkara	Asteraceae	Flower	Flower is used in cold and bronchitis.	[27]
214.	<i>Stellaria media</i> (L.) Vill.	Bariyala	Caryophyllaceae	Whole plant	Decoction is useful in the treatment of chest complaints.	[27]
215.	<i>Stereospermum chelonoides</i> (L.f.) DC		Bignoniaceae	Root	Decoction of the root (10 ml) is given twice daily for one month against asthma.	[25]
216.	<i>Tagetes minuta</i> L.	Gutta	Asteraceae	Whole plant	Volatile oil extracted from the plant is having bronchodilator properties.	[33]
217.	<i>Tephrosia purpurea</i> (L.) Pers.	Sirphonka	Fabaceae	Root; Leaf	Root powder mixed in honey is given in the night at bedtime for relief from chronic cough and lung pain. Powdered leaves are smoked for relief from asthma and cough.	[33]; [43]
218.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bahera	Combretaceae	Fruit	The fruit chewed is believed to cure cold, asthma.	[27]; [30]
219.	<i>Terminalia chebula</i> Retz.	Harir	Combretaceae	Seed; Fruit	Seed coat is used against flu and cold. Rind of fruit is wrapped with young leaves of mango and tied with the stem of <i>Abrus precatorius</i> . The rind thus cooked is eaten as an expectorant.	[33]; [50]
220.	<i>Thymus linearis</i> Benth.	Kochi masha	Lamiaceae		Whooping cough, cold and phlegm.	[28]
221.	<i>Thymus serpyllum</i> L.	Banajwain	Lamiaceae	Leaf, Seed	Leaves and seeds are considered a popular remedy for cough and cold.	[26]
222.	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomas.	Guduchi, Gloh	Menispermaceae	Root; Stem	The stem extract significantly reduced bronchial spasms (allergic). Root powder mixed with honey is used against asthma.	[38]; [33]
223.	<i>Trachyspermum ammi</i> Sprague	Ajwain	Apiaceae	Whole plant	Whole plant extract is used to cure cough, asthma, bronchitis and cold.	[41]
224.	<i>Tragia involucrata</i> L.		Euphorbiaceae	Leaf	Leaf juice (5ml) is given twice a day for 7 days for whooping cough.	[25]
225.	<i>Trifolium pratense</i> L.		Fabaceae	Aerial parts	Aerial parts are used to treat cough and bronchitis.	[28]
226.	<i>Tylophora indica</i> L.	Admutdballi	Apocynaceae	Root	5-10 ml of root extract given daily for 5 days to cure asthma	[22]
227.	<i>Urena lobata</i> L.	Sampakpi	Malvaceae	Leaf	Leaf juice with honey given in cough.	[40]
228.	<i>Viola biflora</i> L.	Banaksha	Violaceae	Leaf, Flower, Seed	Plant is used to treat cough and cold.	[28]
229.	<i>Viola canescens</i> Wall. ex Roxb.	Banksha; Banafsha	Violaceae	Leaf, Flower	Decoction of its flowers and leaves is used in the treatment of cough, cold, bronchitis and asthma.	[32]; [28]
230.	<i>Viola pilosa</i> L.	Banafsha	Violaceae	Whole plant	Plant is used to treat cough, cold and lungs disorder.	[28]
231.	<i>Vitex negundo</i> L.	Lekki; Banna	Lamiaceae	Leaf	3 to 5 fresh leaves are taken daily for one week to cure cough. Fresh leaves are boiled in water and vapors are inhaled twice daily to relieve cold and cough. Fresh leaf-juice mixed in honey is taken on empty stomach in asthma.	[22]; [32]; [50]
232.	<i>Verbascum thapsus</i> L.	Gidat Tamaku; Ban Tambaku	Scrophulariaceae	Leaf, Flower	Smoke of flowers and leaves useful for asthma and other pulmonary problems. Tea of leaves is used in cold.	[27]; [33]; [34]
233.	<i>Viola canescens</i> Wall.	Banafsha	Violaceae	Leaf,	Decoction taken to cure cold, cough.	[27]

234.	<i>Withania somnifera</i> (L.) Dunal	Aswagandha	Solanaceae	Flower Root, leaf	The leaves are chewed to cure cough. Paste of roots is also effective against cough.	[32], [44]
235.	<i>Xanthium strumarium</i> L.	Hameng sampakpi	Asteraceae	Leaf	Leaf extract with honey is given in fever and cough.	[40]
236.	<i>Zanthoxylum acanthopodium</i> DC.		Rutaceae	Leaf	Leaves are boiled with <i>Phlogacanthus thyrsoiflorus</i> leaves and the decoction is taken orally to treat cough.	[46]
237.	<i>Zanthoxylum armatum</i> DC.	Mangeangniu, Tangangnong	Rutaceae	Leaf	Decoction of leaves is given in cough.	[47]
238.	<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr		Zingiberaceae	Tuber	The pounded tuber is mixed with honey and taken orally to treat cough.	[46]
239.	<i>Zingiber officinale</i> Rosc.	Ada; Shunti; Inchi	Zingiberaceae	Rhizome	Same quantities of ginger juice, honey, and pomegranate juice are blended and a tablespoon of this mixture is given 2 - 3 times every day in asthma. Decoction is made by boiling ginger pieces (or ginger powder) in a cup of water for five - 10 minutes. Honey is added to it enhance the flavor and given to drink 1-2 times daily to relieve allergies. 20 ml of juice prepared from corm, betel leaves is given daily for one week to cure cough and cold. Rhizome is burnt and grounded with five to ten seeds of black pepper taken orally to cure cold and cough. Rhizome juice alone or mixed with lemon juice and <i>Kaempferia galanga</i> rhizome is taken for cold and whooping cough.	[38]; [22]; [30]; [39]; [42]

A total of 239 plant species belonging to 193 genera and 80 families were reported as being used in the treatment of diseases of the respiratory tract **Table 1**. It was observed that, maximum number of plant species used in remedial formulations were belongs to family Asteraceae (24 species) followed by Fabaceae (23 species), Lamiaceae (18 species), Solanaceae (11 species), Acanthaceae, Apocynaceae and Malvaceae (8 species), Apiaceae and Euphorbiaceae (7 species), Zingiberaceae (6 species) *etc.* Asteraceae has been considered as one of the largest plant family of flowering plants in India, including many with appreciable medicinal importance<sup>12</sup>.

The traditional medicinal applications of several species of Asteraceae family have been recorded in the literature. Several bioactive compounds have been evaluated for their medicinal importance<sup>13</sup>. These could be the reasons for the wider use of Asteraceae family plants in traditional medicines in India. The genus with the maximum number of species was *Solanum* with seven species. Evaluation of literature showed that all plant parts including roots, stem, rhizome, leaves, flowers, fruits, seeds, bark, whole plant and aerial parts

were used in various preparations of herbal medicines, but leaves (93 species) were most frequently harvested. The collection of leaves for various herbal preparations does not affect the life cycle of plants therefore, it does not harm flora of any particular area<sup>14</sup>. The maximum use of leaves might be due to their comparatively easy collection and availability in the surrounding areas. Moreover, it is believed that leaves are rich in extractable phytochemicals, crude drugs, and many other micro and macro elements which may be proven as valuable for the treatment of various health-related ailments<sup>15</sup>.

Leaves were followed by roots (59 species), whole plant (41 species), fruits (24 species), flowers (19 species), seeds (17 species), bark (14 species), aerial parts (12 species), stem (11 species), rhizome (8 species). The use of other parts may probably be due to bioactive components<sup>16, 17</sup>. The medicinal plants in which roots are harvested are highly threatened<sup>18</sup>. Thus harvesting of roots can be considered destructive for flora in any region. Traditional healers or indigenous people used several herbal formulations preparation modes (decoction, cooked, infusion, powder, paste, juice,

extract, and raw). However, decoction, extract, powder or juices were the most common processes. The literature also showed that among the respiratory diseases, asthma, cough and cold are mostly treated using traditional medicinal plants but very few plants were record to cure serious diseases like chronic obstructive pulmonary disease (COPD), occupational lung diseases, pulmonary hypertension and tuberculosis. During data analysis, most of the published research work was obtained from Odisha, India. This may be due to the common occurrence of respiratory diseases in that state, extensive research work or presence of rich floral diversity not only in the forest or rural areas but also near campuses of educational institutions and other government offices<sup>19</sup>. Inhaled corticosteroids commonly given in asthma and Chronic obstructive pulmonary disease (COPD) negatively affect bones, eyes, immunity, growth, pregnancy, skin and have been associated with diabetes<sup>20</sup>. About 70% of medicines used for the treatment of various diseases are derived from plants or other natural sources. The collection of ethnobotanically used medicinal plants provides first-hand information to pharmaceutical companies, which can further isolate particular molecules responsible for treating different diseases. The antiallergic, antihistamine properties of these plants can be studied in detail. Various laboratory modifications may change the pure compounds or isolated molecules by following various processes. Further, they undergo various clinical trials, and their toxic effects and complete mechanism of action can be studied in detail. If found effective, then can be mass-produced in factories and systematically marketed<sup>21</sup>.

**CONCLUSION:** People have well realized the side effects of synthetic drugs, and as a result, a very good population worldwide has started to explore herbal therapies to treat common respiratory-related issues. However, modern medical science has been proven to be a boon in serious health-related cases. The present review indicated that people residing in different regions or states still use hundreds of medicinal plants to treat different respiratory system-related issues. Further, the detailed exploration of phytochemicals, pharmacological study, and toxicity effects of these plants will help in the scientific validation of various new drugs.

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