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Published in the USA  
 Russian Journal of Biological Research  
 Has been issued since 2014.  
 E-ISSN: 2413-7413  
 2022. 9(1): 30-44

DOI: 10.13187/ejbr.2022.1.30  
<https://rjbr.cherkasgu.press>



## Some Plants Used for Asthma and Bronchitis in Turkey Traditional Medicine (Review)

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### Abstract

Medicinal and aromatic plants are being used for the treatment of various respiratory ailments by the local peoples since earliest times. Many people in underdeveloped countries rely on their indigenous flora to heal a variety of diseases, including those that impact the respiratory system.

Around the world, respiratory disease is a prevalent and significant source of illness and death. Respiratory disorders are a common illness in Turkey. As such respiratory disorders (asthma and bronchitis) are still causing several deaths each year, so phytochemical and pharmacological studies are important in this case. In traditional medicine people rely upon the indigenous and medicinal plant resources to cure different respiratory disorders. It is also important to increase access to traditional medicine, especially in rural areas. Threatened plant taxa, especially endemics need special attention for traditional herbal medicine to be exploited sustainably.

In this research we remarked the diversity and importance of medicinal plants used to treat asthma and bronchitis disorders in the traditional health care system of Turkey with some plant taxa. The primary objective of this review was to assemble some available ethno-medicinal data of plants used for asthma and bronchitis, in Turkey. This paper consists of 170 plant taxa which are used for treatment asthma and bronchitis ailments in Turkey ethnobotany or traditional medicine.

**Keywords:** Ethnobotany, asthma, bronchitis, respiratory diseases, traditional medicine, Turkey.

### 1. Introduction

More than 4,200,127 plant taxa growing on planet earth, about 34,000 to 65,000 plants taxa are used as medicinal plants (Hasan et al., 2007). The people has witnessed growing scientific and commercial interests in medicinal-aromatic plants and plant-based products mainly due to their immense economic potential and widespread cultural acceptability. Phytotherapeutic compounds have been used for disease control since ancient times, but their use has skyrocketed in the recent decade (Ali, Jahangir, 2001).

Respiratory diseases, are a major public health burden worldwide. The latest WHO statistics (2007) estimate that more than 250 million people worldwide have asthma, more than 200 million people have chronic obstructive pulmonary disease and millions of people are affected by allergies. Each year, more than 200,000 people die of asthma. The prevalence of these diseases is increasing

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and there is a continued need for new, improved and effective treatment strategies ([Nature Immunology Reviews, 2008](#)).

Respiratory disorders are common in Turkey due to climatic conditions, limited health care facilities and etc. Te people depend on the indigenous medicinal and aromatic plant resources to treat various respiratory disorders. In many regions of the world, herbal medicines for the treatment of respiratory diseases are commonplace. Traditional medicine has been an important source of products for developing countries in treating common infections and respiratory diseases. The World Health Organization estimates that 80 % of world population use herbal medicines for some aspects of primary health care ([Shinwari et al., 2006](#))

Many parts of Turkey, there has been a growth in the research of remedial plants and their folk usage during the last few decades. This is frequently ascribed to the high expense of health care and limited access to facilities. In the recent years numbers of information are documented on the use of remedial plant taxa in indigenous healing system either by ethnic people or rural communities of Turkey increasing. The knowledge of ethno pharmacology and its holistic approach supported by experience can serve as a fuel for the discovery of new, safe and affordable medicines.

The current review study focused on the documenting of plant taxa used to treat asthma and bronchitis ailments in some part of Turkey. The knowledge of the uses of some plants as a source of medicine in asthma and bronchitis related diseases is very common among the local people. This review study carried out to document the plant taxa used against asthma and bronchitis disorders to contribute related literatures.

## 2. Materials and methods

This research was carried out by thorough searching of different ethnobotany researches of Turkey. As a result of this study, 170 taxa were determined from the literature survey and showed in [Table 1](#).

## 3. Results

Many plants are utilized by the population in Turkey to treat various ailments. The use of this folk medicine, which is made from these plants, has been passed down down the generations. Ethnobotanical investigations carried out by traditional methods of treatment are recorded and this information is aimed to contribute to the development of the drug.

[Table 1](#) was arranged by specifying the family of the plant, the local name, the part of the plant used and the way of use, based on the region where the plants are used.

**Table 1.** Some plants used for asthma and bronchitis ailments in Turkey ethnobotany

Traditional Use	Botanical Name and Family	Family	Local Name	Plant Part Used	Preparation
Asthma, Bronchitis	<i>Abies cilicica</i> (Ant.&Kotschy) Carr. subsp. <i>cilicica</i>	Pinaceae	Kökнар, Gökнар, Kökнар sakızı, Gatran	Cone, Resin	Unspecified ( <a href="#">Altındağ-Çakır, 2017</a> )
Asthma	<i>Abies nordmanniana</i> subsp. <i>equi-trojani</i>	Pinaceae	Unspecified	Cones	Infusion ( <a href="#">Bulut, Tuzlacı, 2009</a> )
Asthma	<i>Acacia longifolia</i> Willd.	Fabaceae	Akasya	Flowers	Infusion ( <a href="#">Güler et al., 2015</a> )
Shortness of breath, Asthma	<i>Achillea biebersteinii</i> Afan.	Asteraceae	Ormaderen, Civanperçemi	Capitulum, Leaf, Flower	Decoction ( <a href="#">Altundag, Ozturk, 2011</a> ; <a href="#">Ari et al., 2015</a> )
Asthma, Bronchitis	<i>Achillea tenuifolia</i> Lam.	Asteraceae	Çoban kirpiği	Leaves	Infusion ( <a href="#">Altundag, Ozturk, 2011</a> )
Asthma	<i>Achillea vermicularis</i> Trin.	Asteraceae	Mevijan	Capitulum	Decoction ( <a href="#">Bulut et al., 2016</a> )
Asthma	<i>Alcea apterocarpa</i> (Fenzl) Boiss.	Malvaceae	Hiro	Corolla	Unspecified ( <a href="#">Akan et al., 2013</a> )
Asthma, Bronchitis	<i>Alcea calvertii</i> Boiss.	Malvaceae	Hatmi çiçeği, Gülhatmi	Flowers	Infusion ( <a href="#">Korkmaz, Karakurt, 2014</a> )
Asthma	<i>Alcea dissecta</i> (Baker) Zoh.	Malvaceae	Govik	Leaves	Poultice ( <a href="#">Altundag, Ozturk, 2011</a> )

Bronchitis	<i>Alcea pallida</i> Waldst.&Kit.	Malvaceae	Hatmi, Hiro, Hiri	Flowers	Infusion (Tetik et al., 2013; Polat et al., 2013)
Asthma	<i>Alcea rosea</i> L.	Malvaceae	Hatmi, Karafatma	Flowers, Leaves	Infusion (Bulut, 2011)
Asthma, Bronchitis	<i>Alchemilla crinita</i> Buser	Rosaceae	Aslanpençesi, Tati	Aerial part	Infusion (Polat et al., 2015)
Asthma	<i>Alhagi pseudalhagi</i> (M.Bieb.) Desv.	Fabaceae	Hurnif	Fruits, Aerial part	Unspecified (Akan et al., 2013)
Bronchitis	<i>Allium cepa</i> L.	Liliaceae	Kahar, Kar	Bulb	Mash (Polat et al., 2013)
Asthma	<i>Althaea armeniaca</i> Ten.	Malvaceae	Hiro	Flowers	Unspecified (Akan et al., 2013)
Bronchitis	<i>Althaea officinalis</i> L.	Malvaceae	Hatmi	Flowers	Infusion (Polat et al., 2011)
Asthma, Bronchitis	<i>Althea officinalis</i> L.	Malvaceae	Hatmi çiçeği, Hıra	Flower	Decoction (Çömlekçiöğlü, Karaman, 2008)
Asthma	<i>Ammi visnaga</i> (L.) Lam.	Umbelliferae	Diş otu, Dişlik, Kürdan otu, Kırdan otu	Leaves, Flowers, Shoots	Unspecified (Doğanoğlu et al., 2006)
Shortness of breath	<i>Amygdalus communis</i> L.	Rosaceae	Badem	Fruits	The oil obtained by crushing and filtering (Akyol, Altan, 2013)
Shortness of breath, Asthma	<i>Angelica sylvestris</i> L.	Apiaceae	Melek otu	Whole plant, Leaves	Infusion (Korkmaz, Karakurt, 2014) Decoction (Çömlekçiöğlü, Karaman, 2008)
Asthma, Bronchitis	<i>Anthemis cretica</i> L. subsp. <i>anatolica</i> (Boiss.) Grierson	Asteraceae	Papatya	Flowers	Decoction or Infusion (Yeşilyurt et al., 2017)
Asthma	<i>Anthemis fumariifolia</i> Boiss.	Compositae	Papatya Yoğurt çiçeği	Capitula	Infusion (Tuzlacı, Şenkardes, 2011)
Shortness of breath	<i>Anthemis tinctoria</i> L. var. <i>pallida</i> DC.	Asteraceae	Papatya	Flowers	Boiled for 5 min and drink as tea (Özüdoğru et al., 2011)
Shortness of breath, Asthma	<i>Anthemis wallii</i> Hub.-Mor. et Reese	Asteraceae	Papatya	Flowers	Infusion (Ari et al., 2015)
Shortness of breath	<i>Apium graveolens</i> L.	Apiaceae	Kereviz tohumu	Fruits	It is consumed by mixing 1 kg of honey with 200 g of celery seeds. (Akan, Bakır-Sade, 2015)
Bronchitis, Asthma	<i>Arceuthobium oxycedrii</i> (DC.) M. Bieb.	Loranthaceae	Ardıç çayı, Parda burcu, Çakırğa burcu, Ardıc burcu, Andiz burcu, Andiz güveleği	Whole plant	Boiled in water and dried on wood. (Özüdoğru et al., 2011) Unspecified (Kupeli et al., 2008)
Asthma	<i>Artemisia absinthium</i> L.	Asteraceae	Pelin	Whole plant	Decoction (Altundag, Ozturk, 2011)
Shortness of breath, Bronchitis	<i>Artemisia</i> sp.	Asteraceae	Pelin, Pelin otu	Leaves, Aerial part	Unspecified (Sarı et al., 2010)
Shortness of breath	<i>Arum detrunctatum</i> C.A. Mey. ex Schott subsp. <i>detrunctatum</i>	Araceae	Livik	Leaves	Eat after roasted with onion and minced meat in oil (Özüdoğru et al., 2011)
Asthma	<i>Asplenium adiantum-nigrum</i> L.	Aspleniaceae	Taş eğreltisi, Karabacak	Whole plant	Decoction (Tuzlacı, Eryaşar-Aymaz, 2001)
Asthma	<i>Astragalus lycius</i> Boiss.	Leguminosae	Unspecified	Flowering parts	Infusion (Tuzlacı, Şenkardes, 2011)
Asthma, Bronchitis	<i>Astragalus microcephalus</i> Willd.	Fabaceae	Geven	Corpus, Leaves	Infusion (Korkmaz, Karakurt, 2014)

Asthma, Bronchitis	<i>Avena barbata</i> Pott ex Link.	Gramineae	Yabani yulaf, Yabani burçak	Leaves, Flowers, Shoots	Unspecied (Doğanoğlu et al., 2006)
Asthma	<i>Ballota nigra</i> L. subsp. <i>anatolica</i> P.H.Davis	Lamiaceae	Balotu, Ballık otu	Whole plant	Decoction (Tuzlacı, Tolon, 2000)
Asthma, Bronchitis	<i>Beta trigyna</i> Waldst & Kit.	Chenopodiaceae	Efelek, Efelik	Flowering branch	Decoction is taken orally (Ezer, Arısan, 2006)
Asthma, Bronchitis	<i>Brassica oleracea</i> L.	Brassicaceae	Lahana	Leaves	Infusion (Güler et al., 2015)
Bronchitis	<i>Capsella bursa-pastoris</i> (L.) Medik.	Brassicaceae	Çoban torbası, Kedi tırnağı, Çoban çadırı	Aerial parts, Fruits	Eaten, before breakfast, (with honey) (Ecevit-Genç, Özhatay, 2006)
Asthma, Shortness of breath	<i>Castanea sativa</i> Miller	Fagaceae	Kestane ağacı	Flowers	Honey obtained from flowers and eaten (Tuzlacı, Tolon, 2000) Unspecified (Sarı et al., 2010)
Asthma	<i>Centaurea depressa</i> Bieb.	Asteraceae	Göybaş	Whole plant	Decoction (Altundag, Ozturk, 2011)
Asthma	<i>Centaurea iberica</i> Trev.ex Sprengel	Asteraceae	Çakır diken	Capitulum	Decoction (Tuzlacı, Tolon, 2000)
Asthma	<i>Centaurium erythraea</i> Rafn.	Gentianaceae	Kırmızı kantaron, Mor kantaron	Aerial parts	Decoction (Kültür, 2007)
Asthma	<i>Cerasus avium</i> (L.) Moench	Rosaceae	Kiraz	Fruit stalks	Infusion (Tetik, 2011)
Asthma, Bronchitis	<i>Ceratonia siliqua</i> L.	Fabaceae	Harnup	Fruits	Pounded fruits are boiled in water and daily 1-2 cups of decoction are drunk (Akaydın et al., 2013) It is boiled and drunk (Korkmaz, Karakurt, 2014)
Asthma	<i>Ceterach officinarum</i> D.C.	Aspleniaceae	Altinotu	Leaves	Infusion (Tuzlacı, Eryaşar-Aymaz, 2001)
Bronchitis	<i>Chelidonium majus</i> L.	Papaveraceae	Kırlangıçotu	Leaves	Infusion (Ugulu et al., 2009)
Shortness of breath	<i>Chrysanthemum coronarium</i> L.	Asteraceae	Papatya	Leaves	Decoction is consumed as tea (Akaydın et al., 2013; Akaydın et al., 2013a)
Asthma	<i>Cichorium intybus</i> L.	Asteraceae	Hindiba	Roots, Whole plant	Decoction (Altundag, Ozturk, 2011)
Bronchitis	<i>Cirsium arvense</i> (L.) Scop. subsp. <i>vestitum</i> (Wimm. & Grab.) Petr.	Asteraceae	Çakırdikeni	Roots	Decoction or Fresh eaten (Altundag, Ozturk, 2011)
Asthma, Bronchitis, Shortness of breath	<i>Citrus sinensis</i> L.	Rutaceae	Portakal	Fruits	It is mixed with honey and consumed (Akan, Bakır-Sade, 2015)
Asthma	<i>Cotinus coggyria</i> Scop.	Anacardiaceae	Tetra	Leaves	Infusion (Ecevit-Genç, Özhatay, 2006)
Asthma	<i>Crataegus meyeri</i> Pojark.	Rosaceae	Alıç	Flowers	Infusion (Tetik et al., 2013; Tetik, 2011)
Asthma	<i>Crataegus monogyna</i> Jacq. subsp. <i>monogyna</i>	Rosaceae	Alıç, Yemişgen, Yemişken dikeni, Alişan çalısı, Cadı dikeni	Leaves, Flowers, Young shoots	Infusion (Tuzlacı, Şenkardeş, 2011) Decoction (Kültür, 2007)
Asthma	<i>Crataegus szovitsii</i> Pojark.	Rosaceae	Sinz, Sez, Risok, Roğık	Flowers, Fruits	Decoction or Infusion (Polat et al., 2013)

Asthma	<i>Cyclotrichium nivenum</i> (Boiss.) Manden.&Scheng.	Lamiaceae	Nane otu	Aerial parts, Leaves	Infusion (Tetik et al., 2013)
Asthma	<i>Cyclotrichium niveum</i> (Boiss.) Manden. & Scheng.	Lamiaceae	Nane otu	Whole plant	Infusion (Tetik, 2011)
Bronchitis	<i>Cydonia oblonga</i> Miller	Rosaceae	Ayva	Leaves	Decoction prepared with 15-20 pieces of leaves and 1 glass of this extract drunk 3 times a day (Akaydin et al., 2013; Akaydin et al., 2013a) Decoction (Tuzlacı, Tolon, 2000) Decoction or infusion (Kültür, 2007) Mixed with gülhatmi flowers (Althea rosea) and decocted, as tea (Sezik et al., 2001)
Asthma	<i>Cynodon dactylon</i> (L.) Pers var. <i>villosus</i> Regel	Gramineae	Ayrık otu	Roots	Infusion (Tuzlacı, Şenkardes, 2011)
Bronchitis, Asthma	<i>Cynodon dactylon</i> (L.) Pers. var. <i>dactylon</i>	Poaceae	Aynkotu, Beygirotu	Whole plant	Decoction (Kızılarslan, Özhatay, 2012)
Asthma	<i>Datura stramonium</i> L.	Solanaceae	Şeytan elması, Boru çiçeği, Tatula, Diken elması, Datula	Leaves	Used in the form of cigarettes (Yaldız et al., 2010; Gül, 2014; Polat, Satıl, 2012; Uzun et al., 2004; Koçyiğit, Özhatay, 2006) Chewed (Ecevit-Genç, Özhatay, 2006)
Shortness of breath	<i>Elaeagnus angustifolia</i> L.	Elaegnaceae	İğde	Flower	Decoction (Çömlekçiöğlü, Karaman, 2008)
Shortness of breath	<i>Equisetum arvense</i> L.	Equisetaceae	Kırkilt otu, At kuğruğu, Eklem otu, Zemberek otu	Leaves, Aerial part	Unspecified (Sarı et al., 2010)
Asthma	<i>Erica arborea</i> L.	Ericaceae	Püren, Piren otu	Flowering branches	Infusion (Polat, Satıl, 2012)
Bronchitis	<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	Yeni dünya	Flowers, Leaves	A glass of decoction prepared with a handful of flowers and leaves is drunk twice daily. (Akaydin et al., 2013)
Asthma	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	Okalıptüs, Gelendost, Galiptoz	Leaves	Infusion (Ertuğ, 2002)
Asthma, Bronchitis	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Okalıptus	Leaves	Infusion (Korkmaz, Karakurt, 2014)
Asthma	<i>Ficus carica</i> L. subsp. <i>carica</i>	Moraceae	İncir ağacı	Leaves	Decoction (Tuzlacı, Tolon, 2000)
Bronchitis	<i>Foeniculum vulgare</i> Miller	Apiaceae	Rezene, Arapsaçı	Seeds	Decoction (Ugulu et al., 2009)
Bronchitis	<i>Gentiana gelida</i> Bieb	Gentianaceae	Unspecified	Stems, Flowers	Decoction (Güneş, Özhatay, 2011)
Bronchitis, Asthma	<i>Glycyrrhiza echinata</i> L.	Fabaceae	Dikenli meyan	Rhizoma	Decoction (Altundag, Ozturk, 2011)
Bronchitis, Asthma	<i>Glycyrrhiza glabra</i> L. var. <i>glabra</i>	Fabaceae	Meyan	Roots	Decoction (Altundag, Ozturk, 2011; Özüdoğru et al., 2011)
Shortness of breath	<i>Helianthus annuus</i> L.	Asteraceae	Ayçiçeği	Flower petals	Unspecified (Sarı et al., 2010)

Asthma	<i>Helichrysum graveolens</i> (Bieb.)	Asteraceae	Yayla çiçeği, Arı çiçeği	Flowering branch	Decoction is taken on an empty stomach (Ezer, Arısan, 2006)
Asthma, Bronchitis	<i>Heracleum trachyloma</i> Fisch & Mey.	Apiaceae	Helelg, Lerg	Leaves	Decoction (Polat et al., 2013)
Asthma	<i>Hibiscus sabdariffa</i> L.	Malvaceae	Habiskus, Medine gülü	Sepals	Infusion (Akan, Bakır- Sade, 2015)
Bronchitis	<i>Hibiscus syriacus</i>	Malvaceae	Ağaç hatmi	Flowers	Infusion (Akbulut, Bayramoglu, 2013)
Asthma, Bronchitis	<i>Hibiscus trionum</i> L.	Malvaceae	Bamya	Seeds	A tea glass of seeds are roasted and powdered, mixed with 2 tablespoonful of honey, and taken twice daily (Akaydin et al., 2013; Akaydin et al., 2013a)
Asthma	<i>Hypericum perforatum</i> L.	Guttiferae	Kantaron, Kantaron çayı, Sarı kantaron, Kantaryon, Sarıcaşu, Kantül, Kesik otu, Mide otu, Kalp otu	Aerial parts	Infusion (Kültür, 2007)
Asthma	<i>Inula crithmoides</i> L.	Asteraceae	Andız kökü, Andız otu	Resin, Fruits, Leaves	Add 100 g of andız root with 1.5 lt of water and drink 3 tea glasses in the morning on an empty stomach (Akan, Bakır-Sade, 2015; Akan, Bakır-Sade, 2015)
Shortness of breath	<i>Inula helenium</i> L.	Asteraceae	Andız otu	Seed	Decoction (Çömlekçiođlu, Karaman, 2008)
Bronchitis	<i>Jasminium fruticans</i>	Oleaceae	Yasemin	Flowers	Infusion (Akbulut, Bayramoglu, 2013)
Asthma, Bronchitis	<i>Juglans regia</i> L.	Juglandaceae	Ceviz ağacı, Kuz, Yondak, Guz	The soft structure inside the bark of the tree	Decoction (Olgun, 2019)
Asthma, Bronchitis	<i>Juniperus drupacea</i> Labill.	Cupressaceae	Andız, Ardıç, Andız giliđi	Cone, Fruits, Seeds	Unspecified (Altındađ- Çakır, 2017)
Asthma	<i>Juniperus excelsa</i> Bieb.	Cupressaceae	Ardıç	Fruits	Decoction (Akaydin et al., 2013; Tuzlacı, Şenkardeş, 2011)
Asthma	<i>Juniperus excelsa</i> Bieb. subsp. <i>excelsa</i>	Cupressaceae	Ardıç	Leafy branches, Fruits, Seeds	Take a bath with boiled water (Özçelik, Balabanlı, 2005)
Bronchitis, Asthma	<i>Juniperus oxycedrus</i> L. subsp. <i>oxycedrus</i>	Cupressaceae	Gilik, Kokarardıç, Ardıç	Fruits, Cone	Fresh fruit is eaten or dried fruit is decocted. (Özüdođru et al., 2011; Sezik et al., 2001) Concentrated jam prepared is taken internally with milk everymorning (Koçyiđit, Özhatay, 2006) Chew in the mouth, inhalation (Kılıç, 2016)
Bronchitis	<i>Laurocerasus</i>	Rosaceae	Karamiř,	Leaves	Applied over chest after

	<i>officinalis</i> Roemer		Karayemiş		heating with honey (Kızılarslan, Özhatay, 2012)
Asthma, Bronchitis	<i>Laurus nobilis</i> L.	Lauraceae	Defne	Leaves	Infusion (Ecevit-Genç, Özhatay, 2006; Uzun et al., 2004)
Bronchitis	<i>Linum</i> <i>usitatissimum</i> L.	Liliaceae	Keten	Seeds	Decoction (Polat, Satıl, 2012) Roasted and crushed (Ugulu et al., 2009)
Bronchitis	<i>Linum</i> sp.	Linaceae	Keten tohumu	Seeds	Grinded and Chewed (Akgül et al., 2016)
Bronchitis	<i>Lysimachia</i> <i>verticillaris</i> Sprengel	Primulaceae	Unspecified	Aerial part	Decoction (Kızılarslan, Özhatay, 2012)
Asthma	<i>Malus sylvestris</i> Miller subsp. <i>orientalis</i> (A. Uglitzkich) Browicz var. <i>orientalis</i>	Rosaceae	Elma	Fruits	Peeled pericarps of apple fruit (1 kg) are boiled in water and daily 3-4 spoonfuls are taken orally. (Akaydin et al., 2013; Akaydin et al., 2013a) The middle part of an apple is removed and filled with black pepper and covered again with a piece of the removed part and cooked inside embers, then applied on throat while hot (Sezik et al., 2001)
Asthma	<i>Malva neglecta</i> L.	Malvaceae	Ebem kömeci	Aerial part, Leaves	Infusion (Polat et al., 2015)
Asthma	<i>Malva nicaeensis</i> All.	Malvaceae	Ebegümeci	Flowers	Decoction (Tuzlacı, Tolon, 2000)
Asthma, Bronchitis	<i>Malva sylvestris</i> L.	Malvaceae	Ebegümeci, Gömeçotu	Aerial parts Flower, Fruit	Infusion or Decoction (Kültür, 2007; Bağcı et al., 2006; Koçyiğit, Özhatay, 2006)
Asthma	<i>Marrubium vulgare</i> L.	Lamiaceae	Boz otu, Kukaş otu, Köpek otu, Gihia kuçuga	Leaves	Add a handful of gray grass to 2-3 liters water and drink it as tea on an empty stomach (Akan, Bakır-Sade, 2015; Akan, Bakır- Sade, 2015)
Bronchitis	<i>Matricaria</i> <i>chamomilla</i> L. var. <i>recutita</i> (L.)	Asteraceae	Papatya	Capitulum	Infusion (Tuzlacı, Eryaşar-Aymaz, 2001) (Kültür, 2007) Unspecified (Sarı et al., 2010)
Shortness of breath	<i>Medicago orbicularis</i> (L.) Bart.	Leguminosae	Düğmelik	Seeds	Infusion (Akyol, Altan, 2013)
Asthma,	<i>Melissa officinalis</i> L.	Labiatae	Ogul otu, Yalancı ısırgan, Limon nanesi	Aerial parts	Infusion + Sugar (Tuzlacı, Tolon, 2000) Infusion (Gül, 2014) (Kültür, 2007) Crushed+honey (Tuzlacı, Eryaşar- Aymaz, 2001) Unspecified (Sarı et al., 2010)
Asthma	<i>Mentha longifolia</i> (L.) Hudson subsp. <i>typhoides</i> (Briq.) Harley var. <i>typhoides</i>	Lamiaceae	Püinge	Leaves	Infusion (Bulut et al., 2016)

Bronchitis, Asthma	<i>Mentha longifolia</i> (L.) Hudson subsp. <i>longifolia</i>	Lamiaceae	Yarpuz	Whole plant	Infusion or decoction ( <a href="#">Altundag, Ozturk, 2011</a> )
Shortness of breath, Asthma	<i>Mentha piperita</i> L.	Lamiaceae	Nane	Leaves, Flowering branches	Decoction ( <a href="#">Akan, Bakır-Sade, 2015</a> )
Asthma, Bronchitis	<i>Mentha pulegium</i> L.	Lamiaceae	Narpuz, Narpız	Flowering branches	Infusion ( <a href="#">Ertuğ, 2002</a> )
Asthma	<i>Mespilus germanica</i> L.	Rosaceae	Döngel, Muşmula	Leaves	Infusion ( <a href="#">Bulut, 2011</a> )
Asthma, Bronchitis	<i>Nepeta</i> sp.	Lamiaceae	Yabani nane, Su nanesi, Yarpuz, Çayır nanesi, Narpıs	Aerial part	Unspecified ( <a href="#">Sarı et al., 2010</a> )
Shortness of breath	<i>Nigella sativa</i> L.	Ranunculaceae	Çörek otu	Seed	The plant's seed is consumed directly. Also, it is mixed into the honey ( <a href="#">Ari et al., 2015</a> )
Shortness of breath	<i>Olea europea</i> L. var. <i>europea</i>	Oleaceae	Zeytin	Leaves	32 pcs olive leaves are boiled in water ( <a href="#">Akyol, Altan, 2013</a> )
Asthma	<i>Onosma isauricum</i> Boiss. et Heldr.	Boraginaceae	Ada çayı	Aerial parts	Infusion ( <a href="#">Tuzlacı, Şenkardeş, 2011</a> )
Bronchitis	<i>Orchis</i> sp. L.	Orchidaceae	Salep	Leaves	Decoction ( <a href="#">Ugulu et al., 2009</a> )
Asthma, Bronchitis	<i>Paliurus spina-christi</i> Miller.	Rhamnaceae	Karaçalı	Fruits	Decoction ( <a href="#">Polat et al., 2011; Korkmaz, Karakurt, 2014; Ecevit-Genç, Özhatay, 2006</a> )
Shortness of breath, Bronchitis	<i>Papaver macrostomum</i> Boiss. & Huet ex Boiss.	Papaveraceae	Gelincik	Seeds	The seeds are mixed with honey and eaten on an empty stomach ( <a href="#">Yeşilyurt et al., 2017</a> )
Bronchitis	<i>Papaver lateritium</i>	Papaveraceae	Gelincik	Flowers	Infusion or Syrup ( <a href="#">Akbulut, Bayramoglu, 2013</a> )
Asthma	<i>Papaver orientale</i> L. var. <i>parviflora</i> Busch	Papaveraceae	Haşhaş	Leaves	Infusion ( <a href="#">Altundag, Ozturk, 2011</a> )
Bronchitis	<i>Papaver rhoeas</i> L.	Papaveraceae	Gelincik, Gelincikotu, Borçanka	Petals	Syrup ( <a href="#">Kültür, 2007</a> )
Asthma, Bronchitis	<i>Peganum harmala</i> L.	Nitrariaceae	Üzerlik otu, Nazar otu	Seeds	The paste is made and eaten. Eaten raw ( <a href="#">Korkmaz, Karakurt, 2014</a> )
Bronchitis, Asthma	<i>Phlomis armeniaca</i> Willd.	Labiatae	Ada çayı, Çöl çayı	Aerial parts, Whole plant	Infusion ( <a href="#">Tuzlacı, Şenkardeş, 2011; Altundag, Ozturk, 2011</a> )
Asthma, Bronchitis	<i>Pimpinella anisetum</i> Boiss.	Apiaceae	Anason	Whole plant	Infusion ( <a href="#">Korkmaz, Karakurt, 2014</a> )
Bronchitis, Asthma	<i>Pimpinella olivieroides</i> Boiss. & Hausskn.	Apiaceae	Maydanoz	Roots	Infusion ( <a href="#">Tetik et al., 2013</a> ) ( <a href="#">Tetik, 2011</a> )
Bronchitis, Asthma	<i>Pinus brutia</i> Ten.	Pinaceae	Çam, Kızıl çam	Leaves, Fruits, Fresh Shoots	Leaves: One glass of decoction prepared with a handful of leaves is drunk daily on an empty stomach Fruits: Cones boiled with sugar to obtain a thick syrup and 2dessertspoonful of this syrup taken orally daily ( <a href="#">Akaydın et al., 2013;</a> )



					Akaydın et al., 2013a) İnfusion (Arıcan et al., 2013) Decoction (Ugulu et al., 2009) Drink the juice obtained by boiling the fresh shoots (Özçelik, Balabanlı, 2005)
Asthma, Bronchitis	<i>Pinus nigra</i> Arn.	Pinaceae	Çam	Branches, Cone	Decoction or İnfusion (Polat et al., 2015)
Asthma, Bronchitis	<i>Pinus pinea</i> L.	Pinaceae	Fıstık çamı, Küner çamı	Branches, Fresh shoot	İnfusion (Polat, Satıl, 2012; Ertuğ, 2002)
Asthma	<i>Pinus sylvestris</i> L.	Pinaceae	Çam	Buds	Decoction (Tuzlacı et al., 2010)
Chronic bronchitis, Asthma, Shortness of breath	<i>Pistacia terebinthus</i> L. subsp. <i>palaestina</i>	Anacardiaceae	Menengiç, Melengiç, Çitlenbik	Fruits	Chronic bronchitis: Fruits are eaten 2 or 3 times a day. Asthma: Smoked as a cigarette (Ünsal et al., 2010; Akan, Bakır-Sade, 2015) Crushed (Tuzlacı, Eryaşar-Aymaz, 2001) 10-15 pcs seeds are boiled (Akyol, Altan, 2013)
Shortness of breath, Asthma	<i>Pistacia terebinthus</i> L.	Anacardiaceae	Menengiç	Fruits, Gum	Unspecified (Akan, Bakır-Sade, 2015)
Asthma, Bronchitis	<i>Plantago lanceolata</i> L.	Plantaginaceae	Sinirli ot, Ateş yaprağı, Boğa yaprağı, Kırkdamar otu, Damar otu, Sinir otu	Aerial parts, Roots, Leaves	İnfusion (Akgül et al., 2016; Kalankan et al., 2015) Boiling with water up to half; taken three times a day (Saçlı, Kalın, 2001) Decoction (Ugulu et al., 2009) Cutting (+honey) (Kültür, 2007)
Asthma	<i>Plantago major</i> L. (Plantaginaceae)		Sinir otu, Sinirli ot	Leaves	İnfusion (Polat et al., 2011)
Bronchitis	<i>Plantago major</i> L. subsp. <i>majör</i> .	Plantaginaceae	Kırkdamar otu, Sinirli ot, Damar otu	Leaves	İnfusion (Kalankan et al., 2015)
Bronchitis	<i>Primula vulgaris</i> Huds.	Primulaceae	Çuha çiçeği	Flowers	İnfusion (Ugulu et al., 2009)
Asthma	<i>Prunus spinosa</i> L. subsp. <i>dasyphylla</i> (Schur) Domin	Rosaceae	Güvem	Fruits	During 40 days eaten before meals (Ecevit-Genç, Özhatay, 2006)
Shortness of breath	<i>Punica granatum</i> L. (Punicaceae)		Nar	Flower	Decoction (Çömlekçiöğlü, Karaman, 2008)
Bronchitis	<i>Robinia pseudoacacia</i> L.	Fabaceae	Katırtırnağı	Flowers	İnfusion (Tuzlacı et al., 2010)
Asthma	<i>Robinia pseudoacacia</i> L.	Fabaceae	Salkım söğüt, Akasya	Flowers	Decoction (Ecevit-Genç, Özhatay, 2006)
Asthma, Bronchitis	<i>Rosa canina</i> L.	Rosaceae	Kopek gülü, Kuşburnu, Dikenbaşı, Öküzgötü, Yabani gül	Fruits	Decoction (Tuzlacı, Tolon, 2000) (Altundag, Ozturk, 2011; Tuzlacı et al., 2010; Kızılarşlan, Özhatay, 2012; Tuzlacı, Eryaşar-Aymaz, 2001; Ugulu et al., 2009; Sezik et al., 2001;

					Yeşilyurt et al., 2017) Boiled in water and drunken (Sarper et al., 2009; Sarper et al., 2009a) İnfusion (Güneş, Özhatay, 2011) Crushed (with lemon) (Ecevit-Genç, Özhatay, 2006)
Bronchitis	<i>Rosa sempervirens</i> L.	Rosaceae	Gülbüzük, İtburnu, Kuşburnu, Sıtmagülü	Fruits	Decoction (Tuzlacı, Eryaşar-Aymaz, 2001)
Asthma, Bronchitis	<i>Rosmarinus officinalis</i> L.	Lamiaceae	Kuşdili, Biberiye	Aerial Parts	Decoction (Ugulu et al., 2009)
Bronchitis	<i>Rubus discolor</i> Weihe & Nees	Rosaceae	Çoban kösteği, Böğürtlen, Kapina, Karamama, Karamuk	Roots	Decoction (Ecevit-Genç, Özhatay, 2006)
Asthma, Bronchitis	<i>Rubus sanctus</i> Schreber	Rosaceae	Dırık, Dırkel, Tiri, Böğürtlen, Karama	Flowers, Roots, Leaves	Infusion (Polat et al., 2013) Decoction (Ecevit-Genç, Özhatay, 2006)
Asthma	<i>Rumex crispus</i> L.	Polygonaceae	Evelik	Leaves	Decoction (Altundag, Ozturk, 2011)
Bronchitis	<i>Salix babylonica</i> L.	Salicaceae	Salkım söğüt	Leaves	Decoction + sugar (Tuzlacı, Tolon, 2000)
Asthma	<i>Salvia cryptantha</i> Montbret et Aucher ex Bentham	Labiatae	Ada çayı Ballık otu Kokulu ot Sarı şabla	Flowers	Infusion (Tuzlacı, Şenkardeş, 2011)
Bronchitis	<i>Salvia officinalis</i> L.	Lamiaceae	Adaçayı	Leaves	Decoction (Ugulu et al., 2009)
Bronchitis	<i>Salvia tomentosa</i> Miller.	Lamiaceae	Adaçayı, Bozşabla, Şabla, Mezar otu, Moskof çayı	Leaves	Infusion (Tuzlacı, Eryaşar-Aymaz, 2001)
Asthma	<i>Sambucus ebulus</i> L.	Caprifoliaceae	Mürver, Memer, Sultan otu, Mülver, Karabubu	Flowers	Infusion (Ecevit-Genç, Özhatay, 2006)
Bronchitis, Asthma, Shortness of breath	<i>Sambucus nigra</i> L.	Caprifoliaceae	Mülver, Mürver, Patırık, Mürver çiçeği, Mürver ağacı, Patpatik, Sultan otu	Flowers, Fruits	Infusion (Bulut, 2011; Yoğunlu, 2011; Altundag, Ozturk, 2011) (Kültür, 2007) Decoction (Kültür, 2007) Eaten (Yeşilyurt et al., 2017)
Bronchitis	<i>Sideritis scardica</i> L. subsp. <i>scardica</i>	Labiatae	Kuyruklu adaayı, Kırçayı, Taşlık çayı, Başak çayı, Adaçayı	Aerial parts	Decoction (Kültür, 2007)
Bronchitis	<i>Tanacetum chiliophyllum</i> (Fisch. et C. A. Mey) Sch. Bip.	Compositae	Bronşit otu	Whole plant	Decoction with drink one glass of it every morning and evening (Güneş, Özhatay, 2011)
Asthma	<i>Teucrium polium</i> L.	Lamiaceae	Kısamahmut otu, Dalak otu	Aerial parts	Infusion (Kalankan et al., 2015)
Asthma	<i>Thalictrum minus</i> L.	Ranunculaceae	Astım otu	Leaves, Stems	Boiling and vapour inhalation (Güneş, Özhatay, 2011)
Asthma	<i>Thymus leucostomus</i>	Lamiaceae	Paryavşan,	Aerial part	Dried plant is mixed

	Hauskn. & Velen. var.leucostomus		Kekik		with honey (Sarper et al., 2009; Sarper et al., 2009)
Asthma, Bronchitis	<i>Thymus leucotrichus</i> var. <i>leucotrichus</i> Maire & Petitmengin	Lamiaceae	Kekik	Leaves, Flowers	Infusion (Korkmaz, Karakurt, 2014)
Asthma	<i>Thymus longicaulis</i> C.Presl subsp. <i>longicaulis</i> var. <i>subisophyllus</i> (Borbás) Jalas	Lamiaceae	Kekik otu	Whole plant	Decoction (Tuzlacı, Tolon, 2000)
Asthma	<i>Thymus sipyleus</i> Boiss. subsp. <i>rosulans</i> (Borbás) Jalas	Labiatae	Kekik	Aerial parts	Infusion (Tuzlacı, Şenkardes, 2011)
Shortness of breath	<i>Thymus sipyleus</i> Boiss. subsp. <i>sipyleus</i> var. <i>sipyleus</i>	Lamiaceae	Beyaz kekik	Flowers	Infusion (Arı et al., 2015)
Asthma, Bronchitis	<i>Thymus vulgaris</i> L.	Lamiaceae	Kekik	Aerial Parts	Decoction (Ugulu et al., 2009)
Asthma	<i>Tilia argentea</i>	Malvaceae	Unspecified	Flowers	Infusion (Bulut, Tuzlacı, 2009)
Bronchitis	<i>Tilia platyphyllos</i> Scop.	Tiliaceae	İhlamur	Leaves	Drunk as a tea (Sağroğlu et al., 2012)
Asthma	<i>Tilia rubra</i> DC. subsp. <i>caucasica</i>	Tiliaceae	Kafkas ihlamuru, Kırmızı ihlamur	Flowers, Leaves	Decoction (Gül, 2014) Infusion (Korkmaz, Karakurt, 2014)
Asthma	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Gwerçal, Gerçal	Fruits, Leaves	Infusion (Polat et al., 2013)
Asthma	<i>Trifolium pratense</i> L. var. <i>pratense</i>	Fabaceae	Yonca	Flowers, Leaves	Decoction or Infusion (Cakilioglu et al., 2011)
Bronchitis	<i>Trigonella foenum-graecum</i> L.	Fabaceae	Çemenotu, Boyotu	Seeds	Decoction (Ugulu et al., 2009)
Asthma	<i>Tripleurospermum transcaucasicum</i> (Manden.) Pobed.	Asteraceae	Papatya	Aerial parts	Infusion (Tetik et al., 2013; Tetik, 2011)
Asthma, Bronchitis	<i>Tussilago farfara</i> L.	Asteraceae	Öksürük otu, Devetabanı, Aslanpençesi,	Flowers, Leaves	Infusion (Polat et al., 2015; Korkmaz, Karakurt, 2014; Kılıç, 2016; Tetik, 2011)
Asthma	<i>Ulmus minor</i> Miller subsp. <i>minor</i>	Ulmaceae	Karaağaç	Roots	Decoction (Altundag, Ozturk, 2011)
Asthma, Bronchitis	<i>Urtica dioica</i> L.	Urticaceae	Isırgan, Dalağan, Sığran, Sırgan	Whole plant, Aerial part, Seeds, Leaves	Decoction (Tuzlacı, Tolon, 2000; Güneş, Özhatay, 2011; Polat et al., 2015; Ugulu et al., 2009; Koçyiğit, Özhatay, 2006) Daily 2 cups of decoction are consumed as tea. (Akaydin et al., 2013) Eaten, crushed seeds with honey (Kızılarslan, Özhatay, 2012) (Sağroğlu et al., 2012)
Asthma, Bronchitis	<i>Verbascum armenum</i> Boiss. et Kotschy	Scrophulariaceae	Sığır kuyruğu	Branches, Corpus, Flowers	Infusion (Korkmaz, Karakurt, 2014)
Shortness of breath	<i>Verbascum cheiranthifolium</i> Boiss. var. <i>cheiranthifolium</i>	Scrophulariaceae	Yalağı, Korek, Sığır kuyruğu	Flowers	Decoction (Özüdoğru et al., 2011)
Asthma, Bronchitis	<i>Verbascum lasianthum</i> Boiss	Scrophulariaceae	Sığırkuyruğu	Flower	Infusion (Kalankan et al., 2015)

Asthma, Shortness of breath	<i>Viscum album</i> L. subsp. <i>albüm</i> .	Loranthaceae	Ökse otu, Çekem otu, Gökçe,	Whole plant, Fruits, Branches	Infusion (Akan, Bakır-Sade, 2015) Decoction (Özüdoğru et al., 2011; Ecevit-Genç, Özhatay, 2006; Akan, Bakır-Sade, 2015)
Asthma	<i>Viscum album</i> L.	Santalaceae	Çekum, Purçük, Armut pürçüğü	Whole plant	Decoction (Polat et al., 2015)
Asthma, Bronchitis	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Zencefil	Roots, Leaves	It is made into a paste or the tea is drunk (Korkmaz, Karakurt, 2014)
Asthma, Bronchitis	<i>Zizyphus jujuba</i> Miller	Rhamnaceae	Hünnap	Fruits	Decoction (Polat, Satıl, 2012; Ugulu et al., 2009)

#### 4. Discussion

In this review, we described the some medicinal plants used in some part of Turkey to treat asthma and bronchitis disorders.

In a study, 384 plant taxa species used to treat respiratory disorders in Pakistan has been documented; cough was the disorder treated by the highest number of species (214) followed by asthma (150), cold (57) and bronchitis (56) (Alamgeer et al., 2018). In another study, a total of 87 plant taxa from 39 families, were reported in the study area for respiratory treatments; approximately 32 % of the plants have been reported as cough remedies (Oduola-Lawal et al., 2015). In some studies, we come across plants used in respiratory system disorders among the people (Kılıç, 2016; Kılıç, Bağci, 2013).

In this study, a total of 170 plant taxa have been documented for herbal care against asthma and bronchitis diseases. Details about these plants, their families, usage patterns and used parts are shown in Table 1.

#### 5. Conclusion

We hope that the information presented in this study can be a source for the development of asthma and bronchitis drugs. In addition, we hope that this review will help you better comprehend and utilize particular herbs to help asthma and bronchitis patients.

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