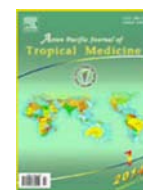


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## Traditional effects of medicinal plants in the treatment of respiratory diseases and disorders: an ethnobotanical study in the Urmia

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## ABSTRACT

**Objective:** To identify, present and review the respiratory medicinal plants which used by Urmian herbalists.

**Methods:** The list of traditional healers of West Azarbaijan Province was prepared and data were obtained by direct observation, interviews and the questionnaires. After that, herbarium samples were collected from the desired area and deposited in herbarium unit of the Faculty of Agriculture, Urmia University, Urmia, Iran.

**Results:** Our results demonstrated that 20 medicinal plants from 10 plant families are used to treat respiratory disorders. Also, the most plant part that used for treating of respiratory disorders was seed (27%) and the most traditional form prescribed by herbalists was boiled (54%). Forty three percentage of Urmia herbalists have used herbs for the treatment of cough.

**Conclusions:** People in this area have a strong belief that plants have a positive impact in the treatment of respiratory disorders and they have used medicinal plants since ancient times to treat these disorders. Our study revealed the importance of herbal medicines and traditional medicine in this area as medicinal resource for drug discovery in future.

## 1. Introduction

Upper and lower respiratory tract anatomically are divided into two parts which are separated from each other by the throat. Respiratory diseases can involve the respiratory tract, lungs or blood vessels and usually a combination of these abnormalities can be seen in many respiratory diseases<sup>[1,2]</sup>. Respiratory diseases can generally classified into the following groups<sup>[2]</sup>: obstructive pulmonary disease, restrictive lung disease, pulmonary vascular disease and other diseases.

Traditional medicine has a long history of serving peoples all over the world. In many countries and cultures of different nations, the use of medicinal plants to treat diseases and maintain public health is highly prevalent<sup>[3–6]</sup>. Natural products play an important role in the field of new drugs research and development. Recent studies have also revealed promising results from using of plants in the treatment or prevention of a wide variety of hard curable diseases such, atherosclerosis<sup>[7,8]</sup>, diabetes<sup>[9,10]</sup>, cardiovascular diseases<sup>[11,12]</sup>, neurological disorders<sup>[13,14]</sup>, and cancer<sup>[15,16]</sup>. The main proposed mechanism for beneficial effects of traditional plant is alterations in redox state<sup>[17,18]</sup>. Therefore, medicinal plants with antioxidant activity have been shown to counteract these situations and always been considered as a healthy source of health promotion. Extraction of medicinal plants, drug preparation,

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local efforts to document valuable informations on folk medicine, effectiveness and safety in respiratory disease treatment are important for the indigenous peoples of West Azerbaijan Province. Therefore, the aims of this study were to gather local knowledge and traditional medicine of ethnobotany of Uremia region to identify herbs that are effective in the treatment of respiratory diseases.

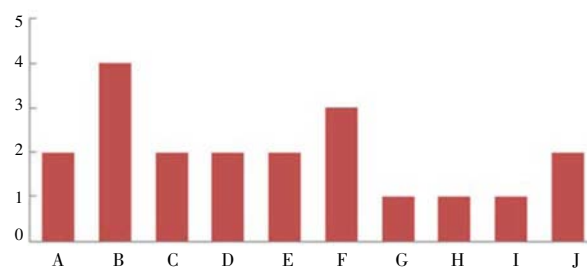
## 2. Materials and methods

In this study the data were collected by interview and questionnaire during the period of April to June 2013 using public resources. List of traditional healers in Urmia City was prepared from Urmia Drug and Food Administration and then necessary information of traditional healers was collected by direct observation, interview and questionnaire methods. Questionnaires were distributed between Urmia traditional healers and at the same time interview was performed. Herbal samples were collected from the desired region and after drying, their herbarium specimens were prepared. The herbarium samples obtained from data of local traditional physicians in the questionnaire were collected from the region and then they were authenticated by a botanist using a variety of flora and valid references. A herbarium specimen from each plant (whole or the used parts) was prepared and deposited in the herbarium unit of Shahrekord University of Medical Sciences, Shahrkord, Iran.

## 3. Results

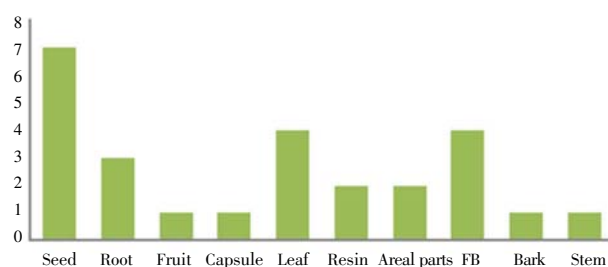
After analyzing the data obtained from questionnaires and interviews in Uremia, it has been demonstrated that overall, 20 medicinal plants from 10 plant families were used for the treatment of respiratory disease/disorders. The number and composition of plant families used in the treatment of respiratory diseases and disorders in Uremia were presented in Figure 1. These data demonstrated that Asteraceae and Malvaceae composed the most parts of plants which used in folk medicine with 20% and 15%, respectively. Parts of the plants which used in treatment of respiratory disease were presented in Figure 2. These results showed that the most part of plant that used in treatment of respiratory diseases is seed (27%). Cough was the most sign of respiratory diseases that treated by folk medicinal plant (43%). After that, treating of Asthema and stimulating of phlegm were the most therapeutic targets in using of medicinal plants (Figure 3). The forms of plant using in treatment of respiratory diseases were presented in Figure 4 and demonstrated that the most prescribed herbal decoction form, was run by groceries

(54%). Table 1 showed the most characteristics of our plants with their therapeutic properties.

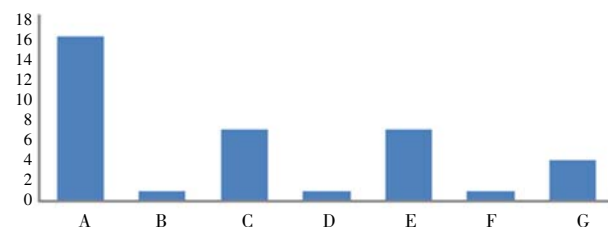


**Figure 1.** The number and composition of plant families used in the treatment of respiratory diseases and disorders in Uremia.

A: Apiaceae; B: Asteraceae; C: Brassicaceae; D: Fabaceae; E: Lamiaceae; F: Malvaceae; G: Papaveraceae; H: Plantaginaceae; I: Platanaceae; J: Rosaceae.

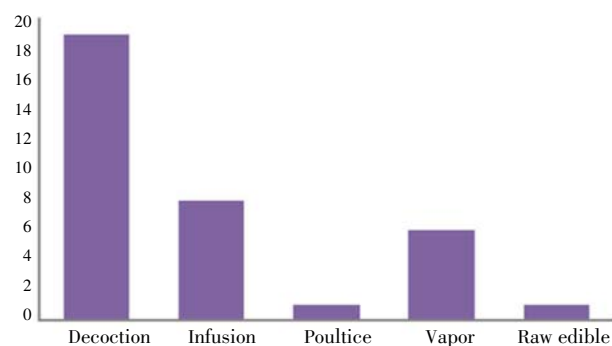


**Figure 2.** Parts of the plants which used in treatment of respiratory disease. FB: Flower branches.



**Figure 3.** The most sign of respiratory diseases that treated by folk medicinal plant.

A: Cough; B: Pulmonary pain; C: Stimulating expectorant; D: Sound jamming; E: Asthma; F: Pulmonary infection; G: Sorethroat.



**Figure 4.** The forms of plant using in treatment of respiratory diseases.

## 4. Discussion

In this study, the ethnobotanic data about medicinal plants which used in folk medicine from different regions

**Table 1**

The characteristics of medicinal plants with their therapeutic properties.

Scientific name	Family	Persian name	Used parts	Type use	Traditional therapeutic effect
<i>Althea hirsuta</i> L.	Malvaceae	Khatmi	Root	Boiled, brewed, incense	Pulmonary infection Inducing mucus Cough
<i>Alyssum desertorum</i> Stapf.	Brassicaceae	Khodoumeh	Seed	Boiled, brewed, incense	Cough
<i>Astragalus effuses</i>	Fabaceae	Gavan	Resin	Boiled, brewed	Cough
<i>Astragalus gossypinus</i> Fisch.	Fabaceae	Gavan panbei	Resin	Boiled, brewed, incense	Cough
<i>Cardaria draba</i> (L.) Desv.	Brassicaceae	AzmaK	Leaf and Seed	Boiled, brewed, incense	Pulmonary infection Inducing mucus Cough
<i>Cotoneaster nummularia</i> F.M.	Rosaceae	Shirkhesht	Areal parts	Boiled	Inducing cough and mucus
<i>Cuminum cyminum</i> L.	Apiaceae	Zire sabz	Seed	Boiled	Asthma
<i>Echinops ritrodes</i> L.	Asteraceae	Shekar tighal	Stem	Boiled	Chronic cough Sore throat
<i>Hibiscus trionum</i> L.	Malvaceae	Khatmi serang	Flower	Boiled, brewed	Cough Inducing mucus
<i>Hypericum perforatum</i> L.	Asteraceae	Alafe chay	Flowering shoot	Boiled	Cough
<i>Malva neglecta</i> Wallr.	Malvaceae	Panirak	Seed, leaf, flowering shoot	Decoction, poultice	Coughing Expectorant
<i>Mentha longifolia</i> L.	Lamiaceae	Pouneh	Areal parts	Boiled, brewed, incense	Pulmonary infection Sore throat Mucus binding Treatment of asthma
<i>Papaver rhoeas</i> L.	Papaveraceae	Shaghayegh	Seed, capsule	Boiled	Inducing mucus Cough
<i>Pimpinella affinis</i> Ledeb.	Apiaceae	Tartizak baghi	Flowering shoot, seed	Boiled	Cough Chest pain relief
<i>Plantago major</i> L.	Plantaginaceae	Barhang	Seed, leaf, root	Boiled	Cough Pulmonary infection
<i>Platanus orientalis</i> L.	Platanaceae	Chenar	Plant skin	Boiled	Treatment of asthma Hoarseness
<i>Rubus persicum</i> Boiss.	Rosaceae	Tameshk	Fruit	Boiled, raw edible	Asthma
<i>Scrozonera cinerea</i> Boiss.	Asteraceae	Counei sheng	Root	Boiled	Cough
<i>Thymus kotschyanus</i> Boiss.	Lamiaceae	Avishan	Flowering shoot	Brewed, incense	Cough, Asthma
<i>Tragopogon carcifolius</i> Boiss.	Asteraceae	Sheng	Leaf	Boiled	Chronic cough

of the West Azarbaijan Province, Iran were prepared and compared. There are several reports about the plants which can poses different therapeutic properties and used for several decades in folk medicine. Arasbaran of *Hypericum* were used as digestive, sedative, astringent and strengthening of the respiratory tract, uterine tonic, immune stimulant, anti-depression, anticancer and anti-HIV. The Utica as an astringent and anti-inflammatory effects, is used to fix and discharge of urine. Oregano, in the internal consumption, has the effect of generating power, diuretic, tonic, attenuating of stomach pain, anti-cancer, and relieve migraine pain, and as the external use, it can be beneficial as a rub at the fracture site and numbness in limbs and teeth. It had been reported that Utica, can be used as laxative, anti-cream soda base, stimulant of gastric secretion and peristalsis of the intestines and anticancer<sup>[19]</sup>. In other regions of Iran, which have traditional religion, the use of medicinal plants is very common even higher than chemical drugs. In Sistan and Baluchistan Province, South-

East of Iran, *Cardaria draba* (L.) Desv, Azmak, was used to soften the breast and relieve anemia<sup>[20]</sup>.

In Shiraz and Kazeroun, both from Fars Province, Southern of Iran, the Armenian marshmallow for colds, bacterial infections, cough, sore throat, angina, bronchitis, and digestive problems are used. Also, Tyghal sugar (*Echinops lalesarensis*) were reported to treat skin and gastrointestinal diseases<sup>[21,22]</sup>.

Traditional use of plants in other province of Iran is also common and this include Kerman<sup>[23]</sup>, Isfahan<sup>[24]</sup>, Ilam<sup>[4]</sup>, and Lorestan<sup>[25]</sup>. Therapeutic effect of medicinal plants in North, South, East, West and central parts of Iran showed that this country is a vast place to use herbs for treating diseases, however, the use of some plants in different regions of Iran with similar therapeutic effects were observed. Although, each medicinal plant may have its own component to treat special diseases, but, it has been shown that most of these plants possess antioxidant activities<sup>[17,26,27]</sup>. It should be noted that most of the diseases which are treated with these

medicinal herbs are affected by oxidative stress<sup>[28–30]</sup>. Oxidative stress has been implicated in respiratory complications and various pathological conditions including aging<sup>[31,32]</sup>, cancer<sup>[15,33,34]</sup>, neurological disorders<sup>[35,36]</sup>, diabetes<sup>[37,38]</sup>, and ischemia/reperfusion injuries<sup>[32,38]</sup>. These conditions involve many changes, including alterations in the thiol/disulphide redox state, impaired glucose tolerance, and especially, activation of inflammatory processes<sup>[39,40]</sup>. They are also associated with increased activity of nicotinamide adenine dinucleotide phosphate oxidase or induction of xanthine oxidase with subsequent formation of reactive oxygen species during chronic inflammation and the generation of damage, particularly in respiratory complications<sup>[41]</sup>. Exposure to agents that increase the formation of reactive oxygen species might accelerate the initiation of pathological changes. Animal models have uncovered a link between an organ's capacity to respond to oxidative stress and diseases development<sup>[42,43]</sup>. Therefore, plants which have antioxidant activity should be able to counteract these conditions.

In conclusion, traditional medicinal plants can be a source of biological and pharmacological products for the future<sup>[44–49]</sup>. In general, people believe that the strong positive impact of medicinal plants in the treatment of respiratory disorders. Existed since ancient times, herbs have been used to treat these disorders. Our study revealed the importance of plants in herbal medicine and traditional medicine area.

### Conflict of interest statement

We declare that we have no conflict of interest.

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