

## ORIGINAL RESEARCH

# Applications of Traditional Medicine Among Patients Attending the Chest Disease Clinic

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### Abstract

**Objective:** Among various traditional practices for respiratory complaints, the most common one involves the consumption of herbs in different forms. This study was conducted to detect the use of herbs in a particular region, Duzce.

**Material-Method:** Patients who visited the chest diseases clinic (n=204) were asked whether they used herbal remedies as a part of traditional medicine, aside from the treatments provided at the clinic.

**Results:** The rate of traditional medicine application for their health complaints among the patients was 39.7% (81/204). The most frequently used applications were ginger tea (18.5%), lemon juice (18.5%), pine cone syrup (16%), and carob molasses (14.8%). Patients mainly used traditional medicine for chest pain (50%), phlegm (47.1%), cough (43.1%), and shortness of breath (35.4%). Traditional medicine was significantly lower in patients experiencing shortness of breath (35.4% of those who used traditional medicine compared to 64.6% of those who did not, p=0.001). The frequency of traditional medicine use was 50% in sarcoidosis patients, 43.1% in asthma patients, and 30% in COPD patients. The rate of traditional medicine use was 41.5% among regular medication users.

**Conclusion:** In addition to regular medication for respiratory complaints and diseases, patients used traditional medicine at an average rate of 40%. When patients' use of regular and/or traditional medicine is questioned, valuable information is obtained regarding their compliance with treatment and the possible benefits and harms of their traditional medicine products.

**Keywords:** Health, Traditional Medicine, Respiratory Complaints

### INTRODUCTION

Culture is defined as the values, beliefs, attitudes, behaviors, customs, and traditions learned, shared, and transmitted across generations by a group of people. Health and disease are also concepts shaped within cultural structures, which may vary from each culture. Therefore, beliefs about illness and health in societies and healing methods continue to be transmitted to the present as a part of traditional culture and maintain their impact.<sup>1</sup>

Turkey's geographical location has brought together various cultures, resulting in the formation of diverse syntheses. The interactions of these cultures have diversified customs and traditions while enriching the remedies for the public's health issues. Especially practices and beliefs concerning sociocultural and even biological phenomena such as birth, newborn care, postpartum period, illness, and death have persisted to the present day.<sup>1</sup>

Studies on the use of traditional medicine methods

in chest diseases involve various practices, such as brewing and using leaves and roots of numerous plants, as well as using their powder forms. Cough, asthma, common cold, and bronchitis were the most common conditions for which herbal remedies were used. A wide range of plants, from daisy family members to root vegetables, has been utilized in these practices.<sup>2</sup>

Düzce, a province in Turkey with its diverse cultural heritage, also boasts a rich herbal flora. This study aims to gather information about traditional treatment methods applied by the people of Düzce for complaints related to chest diseases, such as cough, phlegm, and shortness of breath. Additionally, the research aims to discuss the most frequently used herbal products in traditional medicine for chest diseases and examine data related to their place in evidence-based medicine.

## MATERIALS AND METHODS

### Materials

The study was conducted with 204 patients who presented to the Chest Diseases Clinic at Düzce University Faculty of Medicine with various chest disease complaints between September and December 2021 and completed routine medical examinations and controls.

### Methods

A questionnaire form was presented to the participants through face-to-face interviews. The first part of the form, which we developed, included questions about participants' sociodemographic characteristics (gender, age, place of birth, education level, marital status, and number of children). The second part of the form consisted of questions related to the reasons for patients' clinic visits (their diseases and/or complaints), whether they had tried any traditional medicine application for these reasons, whether they experienced any side effects from the applied traditional remedy, and the source from which they learned about this traditional medical practice. An informed consent was derived from all participants. Patients with communication problems due to impaired intellectual and/or physical capacity were not included. The study obtained Ethical approval from the Non-Interventional Research Ethics Committee

of Düzce University Faculty of Medicine (Decision No: 2022-43).

### Statistical analysis

Statistical analyses were performed using SPSS version 21. Descriptive statistics, including the mean and standard deviation, were calculated for all data types in the study. For group comparisons, the Independent Samples t-test was used for variables meeting parametric test assumptions, while the Mann-Whitney U test was applied for variables that did not meet these assumptions. Fisher's Exact and Pearson Chi-square tests were employed to compare categorical variables. A p-value of <0.05 was considered statistically significant.

## RESULTS

Among the 204 patients included in the study, 51% (n=104) were female. The ages of the participants ranged from 19 to 84 years, with the youngest being 19 and the oldest being 84 years old. The average age of the participants was  $53.2 \pm 15.5$ , and approximately half (47.5%) had completed primary education. Most (83.8%) were married, and the average number of children among them was 3 (min: 1, max: 11). Nearly 70% of the patients were born in Düzce and its districts, and 30% were employed (Table 1).

**Table 1.** Demographic characteristics of patients

	n	%
<b>Gender</b>		
Male	100	49.0
Female	104	51.0
<b>Marital Status</b>		
Married	171	83.8
Single/Other	33	16.2
<b>Education</b>		
Illiterate	13	6.4
Literate	6	2.9
Primary School	97	47.5
Middle School	15	7.4
High School	42	20.6
College/University	31	15.2
<b>Birthplace</b>		
Düzce	140	68.6
Other Cities	63	30.9
Foreign	1	0.5
<b>Employment</b>		
Yes	143	70.1
No	61	29.9
<b>Age Groups</b>		
0-39	42	20.6
40-59	77	37.7
60 and above	85	41.7

The most common reasons for patients' visits to the chest disease clinic were shortness of breath

(88.7%), cough (70.6%), phlegm (34.3%), and chest pain (23.5%). Their current diseases included

asthma (25%), COPD (9.8%), sarcoidosis (8.8%), and lung cancer (1.5%). Among the participants, 40.2% (82) used regular medication for their disease or complaint. The most commonly used medication forms were inhalers, aerosolizers, and nebulizers.

The rate of using traditional medicine for their health complaints among the patients was 39.7%

(81/204). The most frequently used applications were ginger tea (18.5%), lemon juice (18.5%), pine cone syrup (16%), and carob molasses (14.8%). Other herbs, such as turmeric, mint, linden, thyme, cinnamon, mulberry, garlic, and fennel, were used less frequently (Table 2).

**Table 2.** Used herbs

	n	%
Ginger	15	18.5
Lemon	15	18.5
Pine cone	13	16.0
Carob molasses	12	14.8
Turmeric	8	9.8
Mint	8	9.8
Linden	8	9.8
Thyme	6	7.4
Cinnamon	3	3.7
Mulberry	3	3.7
Garlic	3	3.7
Fennel	2	2.4
Others*	17	20.9

\* Onion, black pepper, mushroom, corn, cherry, apple, green tea, rose hip, radish, cherry laurel, juniper, cat's tail, St. John's wort, laurel, mastic, capon, sage

Most of the used products were in the form of fruit (35.8%), leaves (24.7%), and roots (19.7%) of the plants. They were commonly used with honey, molasses, or by brewing them.

It was observed that the herbs were used both individually and in combination, and several application methods were used simultaneously. Ginger (used alone at a rate of 6.7%, and in combination at a rate of 93.3%,  $p=0.007$ ) and lemon (not used individually, all usage combined,  $p=0.001$ ) were used statistically significantly in combination. Sour or bitter products (lemon, ginger, pine cone) were especially used with honey or molasses to sweeten their taste. When looking at the most common complaints for which traditional remedies were used, patients primarily resorted to them for chest pain (50%), phlegm (47.1%), cough (43.1%), and shortness of breath (35.4%). The rate of using traditional medicine was significantly lower in patients experiencing shortness of breath (35.4% of those who used traditional medicine compared to 64.6% of those who did not,  $p=0.001$ ). The frequency of traditional medicine use was 50% in sarcoidosis patients, 43.1% in asthma patients, and 30% in COPD patients. Among regular medication users, the overall rate of using traditional medicine was 41.5%, 41.2% for inhaler users, 37.0% for aerosolizer users, 52.4% for nebulizer users, and 50.0% for oral medication users.

The relationship between patients' traditional

medicine methods and demographic characteristics was tested. Gender, age, education, employment status, birthplace, and working status did not affect the rates of traditional medicine usage (Table 3).

According to the responses to the question of which plant they used for which complaints or clinical conditions, ginger was found to be used for cough (8.3%), expectoration (11.4%), shortness of breath (7.7%), and relieving chest pain (16.7%). The rate of using ginger was significantly higher in patients with chest pain than those without (16.7% vs. 4.5%,  $p=0.009$ ). The rate of using ginger for asthma was 15.7%, and for COPD, it was 10%. The rate of using ginger in patients diagnosed with asthma was significantly higher than in non-asthmatic patients (15.7% vs. 4.6%,  $p=0.014$ ). Lemon, as the second most common herb, was used for all complaints related to chest diseases. It was mainly used for cough (8.3%), shortness of breath (6.6%), and asthma (7.8%). Pine cone, the third most common herb, was used for cough (7.6%), phlegm (8.6%), asthma (7.8%), shortness of breath (6.6%), and COPD (10%). Lastly, carob was used for chest pain (6.3%), cough (7.6%), and asthma (7.8%).

When asked about the source from which they learned traditional medicine practices, participants reported primarily from their close environment (26.5%), followed by the internet (3.9%), herbalists (3.4%), relatives (2%), television (0.5%), and other sources.

**Table 3.** Use of traditional medicine by demographic characteristics

	Using traditional medicine		Not using traditional medicine		p
	n	%	n	%	
Gender					
Male	40	40.0	60	60.0	0.933
Female	41	39.4	63	60.6	
Marital Status					
Married	69	40.4	102	59.6	0.668
Single, other	12	36.4	21	63.6	
Education					
Primary and Pre-middle school	48	41.4	68	58.6	0.665
High School, College/University	33	37.5	55	62.5	
Birthplace					
Düzce	55	39.3	85	60.7	0.878
Other Cities	26	40.6	38	59.4	
Employment					
Yes	26	42.6	35	57.4	0.640
No	55	38.5	88	61.5	
Age Groups					
0-39	13	31.0	29	69.0	0.141
40-59	37	48.1	40	51.9	
60 and above	31	36.5	54	63.5	

## DISCUSSION

Due to the richness of its vegetation, Turkey is one of the leading countries in the use of traditional herbal medicine. In our study conducted in Duzce province, where rural life characteristics are still dominant, the rate of herbal product use for various respiratory complaints was around 40%, and there were no significant differences in gender, education, marital status, and birthplace. Although herbal product use was 48% in the age group of 40-59, there was no significant difference compared to other age groups. Patients mainly obtained herbal medicine recommendations from their close circles. In our study, ginger, lemon, pine cone, and carob were the most preferred herbs. In Erarslan et al.'s survey-based research on individuals with lung disease, it was observed that women and urban residents used herbal products significantly more. The most preferred herbs in their study were mint, lemon, licorice root, linden, and rosehip.<sup>3</sup> Gülhan et al.'s study, which included 94 COPD patients, observed a herbal product use rate of 73%, which was significantly higher in severe COPD cases.<sup>4</sup> Our study discussed the use of the four most common plants in traditional medicine and scientific studies in detail. We observed their place in traditional medicine in respiratory complaints.

**Ginger (*Zingiber officinale* Roscoe):** Ginger is a perennial plant from the Zingiberaceae family, capable of growing up to one meter in height, with slender, elongated leaves and flowers that exhibit yellow-red hues. Its root tubers are used as both a spice and medicine, and it thrives in tropical or subtropical climates. In terms of appearance, it closely resembles a sweet potato. The irregular,

fragmented, peeled, or unpeeled dried roots of the ginger plant, either in whole or ground form, find widespread culinary use across the globe.

Fresh ginger is richer in active substances; it contains 80% water, 2% protein, 1% fat, 12% starch, calcium, phosphorus, iron, and vitamins B and C. The water content in dried ginger is 10%. One teaspoon of ginger, which can be used as a spice, contains negligible nutrients except for manganese. This amount of ginger meets 79% of the daily manganese requirement.<sup>5</sup>

**Usage in traditional medicine:** In Ayurveda, ginger has been used to treat throat disorders, headaches, chest ailments, hemorrhoids, and rheumatism. It is also utilized for its carminative and digestive properties.<sup>5</sup> In traditional and non-evidence-based medical practices, ginger is believed to be beneficial for stomach discomfort and dizziness. Additionally, it is mentioned to have appetizing, antiseptic, carminative, digestive regulatory, respiratory tract opening, and detoxifying effects. It is also claimed to dilate blood vessels, induce sweating and warmth, and invigorate the heart. Moderate amounts of ginger are generally considered safe by the FDA (Food and Drug Administration). However, it can interact with medications such as Coumadin and Warfarin, which are used regularly, and alter their safe levels.<sup>6</sup> In powdered form, ginger may cause allergic rashes and, despite being considered safe, may lead to symptoms such as heartburn, gas, and nausea. It can also have adverse effects on individuals with gallstones.

**Medical research involving its use in chest**

**diseases:** Ginger oil has been proven to cause bronchodilation by stimulating B2 adrenergic receptors in experiments with mice, due to its citral, eucalyptol, and camphor content.<sup>7</sup> Other animal studies have also shown that it reduces airway hyperreactivity and inflammation.<sup>8</sup>

In a study by Rouhi et al. involving 92 patients diagnosed with asthma who took ginger (150 mg/day), significant reductions were noted in wheezing, chest tightness, nocturnal cough attacks, daily inhaler use, and weekly dyspnea attacks in the ginger group; however, there was no significant difference in respiratory functions between the groups. In one of the 109 randomized controlled trials examining the effects of ginger on humans, ginger was found to alleviate asthma symptoms, and in another study, it was observed to reduce the mechanical ventilation time in patients with Acute Respiratory Distress Syndrome (ARDS).<sup>10</sup>

In our study, ginger was the most commonly used herbal product, and it was used primarily to suppress cough and phlegm, open the airways, and alleviate chest pain. The use of ginger by patients diagnosed with asthma, at a rate of 15.7%, also drew attention. The improvement in symptoms observed in the ginger-using group in Rouhi et al.'s studies may also apply to our study group. However, the fact that the daily ginger intake of the individuals included in our study was not standardized weakens our inference. In our group, ginger was more frequently observed than in Erarslan et al.'s survey studies. Since patients in our group were most influenced by their close circles (26.5%) regarding herbal medicine, it is appropriate to investigate the process that made ginger popular.

**Lemon (Citrus genus, Rutaceae family):** It contains various citrus fruits (orange, mandarin, sweet lemon, lemon, grapefruit, loquat). They are mainly consumed as fresh or raw materials for fruit juices or in canned form. They are also used as additives in food, beverages, cosmetics, medicines, spices, and cosmetic components. Apart from vitamin C, they contain sugar, fiber, potassium, folate, calcium, thiamine, niacin, vitamin B6, phosphorus, magnesium, copper, riboflavin, and pantothenic acid. Citrus fruits contain active metabolites such as flavonoids, alkaloids, coumarins, limonoids, carotenoids, phenolic acids, and volatile oils. These metabolites have various bioactivities, including antioxidant, anti-inflammatory, anticancer, cardiovascular protective, and neuroprotective effects.<sup>11</sup>

**Usage in traditional medicine:** Lemon has been

described as a powerful antidote to potent poisons since ancient Greek times.<sup>12</sup> In Ayurveda, different citrus fruits have been used as appetite stimulants, cardiogenic, antiemetics, and for regulating digestion.<sup>13</sup>

**Medical research involving its use in chest diseases:** Giving citrus fruits in different doses to mice exposed to cigarette smoke and developing chronic neutrophilic inflammation suppressed inflammation. The intake of citrus fruits reduced neutrophil, myeloperoxidase, and matrix metalloproteinase-9 levels in the bronchoalveolar lavage fluids of mice.<sup>14</sup> Important flavonoids in lemon, such as quercetin, have been shown to block histamine and other allergy mediators, making it potentially effective in treating asthma.<sup>15</sup> In our study, lemon was used for cough, shortness of breath, and asthma. However, it was used less frequently for asthma (7.8%) than ginger (15.7%).

**Pine Cone [Pinus pinea L.]:** Terpenoids, steroids, proanthocyanidins, and flavonoids within the Pinus species have drawn the attention of both traditional and modern medicine. Various studies have shown these compounds to have antibacterial, antifungal, and antioxidant activities.<sup>16, 17</sup>

**Usage in traditional medicine:** In ancient Chinese medicine, pine cones were used to moisturize the lungs, eliminate cough, and reduce fever.<sup>18</sup> Studies in Artvin and Çankırı showed that people used pine cones to relieve various complaints. For example, the green cones of Scots Pine (*Pinus sylvestris*) were used as a decoction for coughs, and the cones of Corsican Pine (*Pinus nigra*) were boiled in water and mixed with honey for the treatment of asthma.<sup>19, 20</sup>

Considering that Düzce is rich in pine forests, it is unsurprising that pine cones were our study's third most commonly used herbal product. Pine cones alleviate cough, phlegm, and shortness of breath and were preferred by 10% of COPD patients and 7.8% of asthma patients.

**Medical research involving its use in chest diseases:** The French Maritime Pine (*Pinus Maritime*) extract from the pine species was used in a mouse model developed for asthma. The oral administration of Pycnogenol in mice reduced inflammatory cytokines and cells such as IL-4, IL-5, and IL-13 in bronchoalveolar secretions. This suggests that Pycnogenol could be used in asthma treatment.<sup>21</sup>

In a study where Pycnogenol was combined with inhaled corticosteroids in asthmatic patients, a daily dose of 100 mg was administered, resulting in

reduced steroid dosage, decreased nighttime awakenings, and improved asthma control.<sup>22</sup> Additionally, in a mouse model of Chronic Obstructive Pulmonary Disease (COPD), Pycnogenol demonstrated the ability to reduce airway inflammation.<sup>23</sup>

**Carob** [*Ceratonia siliqua* L.]: Carob is a widely used plant in the food industry due to its rich content of fiber, sugar (especially sucrose, fructose, and glucose), and minerals (sodium, potassium, iron, copper, manganese, and zinc). It is abundant in the Mediterranean region and is rich in polyphenols and flavonoids.<sup>24</sup>

**Usage in traditional medicine:** One of the observed historical medical uses is treating mouth ulcers.<sup>25</sup> In Southern Italy, it has been used to alleviate digestive system inflammation and as an expectorant.<sup>26</sup> In Iraq and Morocco, it is known that carob powder is used against diarrhea and abdominal pain.<sup>27, 28</sup>

In studies conducted in our country, it has been observed that carob is used through infusion for the treatment of urinary system diseases, in the form of molasses for the treatment of anemia, and in the treatment of liver diseases. It has also been used for the treatment of prostatitis and anemia.<sup>29, 30, 31</sup>

**Medical research involving its use in chest diseases:** In a model of isolated tracheal bronchoconstriction developed in rabbits, carob has been observed to induce dilation through its antimuscarinic activity.<sup>32</sup> In another study conducted on mice, carob extract reduced myeloperoxidase activity, hydroxyproline content, and nitric oxide levels, which were increased by shisha smoke in the lungs.<sup>33</sup> In our study, carob was used for chest pain (6.3%), cough (7.6%), and asthma (7.8%).

When searching the scientific literature, it has been observed that there are very few randomized controlled clinical trials for this study's most commonly used four plants for alleviating respiratory complaints. However, animal studies have revealed some therapeutic mechanisms of action. Ginger has been shown to induce bronchodilation by stimulating  $\beta_2$  receptors, lemon inhibits neutrophils, myeloperoxidase, and matrix metalloproteinase-9 while reducing histamine release, pine cone reduces inflammatory cytokines such as IL-4, IL-5, and IL-13, and carob creates bronchodilation through antimuscarinic activity in animal studies.

However, all these studies have not yet reached a channel where appropriate, effective, and reliable

dosage ranges provided by randomized controlled human studies, which are the basis of evidence-based medicine, are determined. The results of ongoing randomized controlled trials related to ginger and similar plants in asthmatic patients are yet to be published. In our study, the rate of using traditional medicine practices among patients receiving standard bronchodilator treatment ranged from 37% to 52%. The significant use of traditional medicine practices by patients with respiratory complaints, alongside modern medical approaches, may be scientifically justified as randomized controlled studies involving medicinal products increase.

The widespread use of traditional medicine, including herbs, has prompted the WHO to study and track data on traditional medicine for years. To this end, the WHO has developed a "traditional medicine strategy" to help member states research, integrate, and regulate traditional medicine in their national health systems. Monitoring its safety is an essential and prioritized area of work for traditional medicine. The WHO encourages Member States to establish an integrated pharmacovigilance system for both conventional pharmaceuticals and traditional products.

Traditional products and practices are subjected to the same scrutiny (regulation, safety, and quality control) as pharmaceuticals; 124 WHO Member States (including Turkey) have passed laws or regulations for herbal medicines.<sup>34, 35</sup>

## CONCLUSION

Besides significant improvements in the therapeutic interventions for respiratory diseases, traditional medicine methods have remained. Cough, asthma, common cold, and bronchitis were the most common conditions for which herbal remedies were used. A wide range of plants has still been used to heal respiratory complaints. Patients with respiratory complaints living in Duzce mostly use ginger, lemon, pine cone, and carob. Those four plants have been used in animal and human research studies, and effects such as bronchodilation, inhibition of neutrophils, myeloperoxidase, and reduction of histamine release were observed.

Suppose all patients who apply to the Chest Diseases Clinic for respiratory complaints are questioned whether they use traditional medicine and/or modern medical practices. In that case, valuable information will be obtained regarding their compliance with treatment and the possible benefits and harms of the traditional medicine

products they use.

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