

# Ethnomedicinal Uses of Genus *Lavandula* (Lamiaceae) in Turkish Traditional Medicine

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**Abstract:** *Lavandula L. (Lamiaceae)* is a widely distributed medicinal plant throughout the world and has been used since ancient time. Popular indications of the several species of this genus include treatment of stomach diseases, headache, inflammation, pains, insomnia, diuretic and expectorant. Phytochemical investigations of *Lavandula* species have revealed that many components from this genus are highly bioactive. There are many reports on the mentioned ethnomedicinal effects. As a result of the study, the authors found that six *Lavandula* taxa and two multi-herbal formulas are used as herbal medicine in Turkish traditional medicine.

**Keywords:** *Lavandula*; Lamiaceae; Medicinal plant; Ethnomedicinal uses; Turkish Traditional Medicine

## 1. INTRODUCTION

Medicinal plant culture is an indispensable accumulation of knowledge depending on observations, and trial and errors for centuries. It started with garlic, castor oil and myrrh in the Egyptian Ebers papyrus in 1500 BC. It is a traditional culture that has reached today with the help of Indian, Chinese and Arabic medicine [81].

Plants are the most important source of traditional folk medicine today. People living in various parts of the world have benefited from the plants grown in their environment for this purpose. In these drugs, individuals used the whole plant, various plant organs (roots, leaves, flowers, fruits, seeds, etc.), or plant-derived substances (milk, terebinth, resin, balsam, etc.). Individuals use plants directly or in various forms (pills, powder, infusion, decoction, ointment, cataplasm). In folk medicine, plants are often used alone or together with other plants. Individuals create special prescriptions in the preparation of these drugs, and they adjusted the amounts accordingly. The effect of a plant can be increased when used with other plants [82].

Medicinal plants have been used to treat various diseases. In developed countries like United States, a significant number of Americans use medicinal plants to fight against certain diseases. Some years back, an estimated 25% of prescriptions contained plant-derived active ingredients, and the number of visits to providers of traditional medicine exceeded by far the number of visits to all primary care physicians [83, 84]. In Pakistan, it is estimated that about 52% of the population chose complementary and alternative medicine to take care of themselves of illnesses [85]. In Japan, 60–70% of allopathic doctors prescribe traditional medicines for their patients. In China, traditional medicine accounts for about 40% of all healthcare treatments [86, 87].

Turkey is located at the intersection of three different phytogeographical regions. These phytogeographical regions are European-Siberian (in North Anatolia), the Mediterranean (in Western and Southern Anatolia), and Irano-Turanian (in Central and South-Eastern Anatolia) [88]. These phytogeographical regions of Turkey are the main cause of the evolution of different species of plants. More than 12,000 plant taxa grow naturally in Turkey. Approximately 3,649 (3/1 ratio) of them are endemic taxa [89]. However, the endemic richness of Turkey is not limited to this number: the average number of plants is increasing by the discovery of a new endemic taxa presence every 10 days [89, 90].

Due to its cultural and floristic richness, Turkey is an important country, where reserachers have conducted many traditional folk medicine studies. Historically, the oldest written source about plants grown in Anatolia and used as folk medicine is *De Materia Medica*, written by Dioscorides in A.D. 78 [91]. In Turkey, the scientific studies on traditional folk medicine began in 1923, and until today, in many parts of the country reserachers have conducted an increasing number of studies on the subject [92]. In recent years, the importance given to the plants used for medicinal purposes has increased in Turkey, and the studies on the medicinal uses of plants have increased [2, 4, 5, 6, 10, 17, 18, 25, 28, 38, 43, 47, 50, 54, 55, 65, 76, 79, 91, 92, 93, 94, 95, 96, 97, 98, 99].

### 1.1 The Genus *Lavandula*

The genus *Lavandula* is an important member of the Lamiaceae family. It contains 47 evergreen shrub species with aromatic leaves and flowers [100]. This genus has a distribution stretching from Cape Verde and the Canary Islands, Europe across to northern and eastern Africa, the Mediterranean, southwest Asia to southeast India [101]. *Lavandula* species are grown in France, Spain, and Italy. In Turkey, mainly two species, *L. angustifolia* and *L. stoechas*,

and their subspecies and hybrid formed grow naturally or are cultivated [102]. The medicinal importance of the plant has been revealed in detail [103, 104] and the herbal medicines prepared from this plant are registered to many Pharmacopoeias [105].

Essential oils, mainly from *L. angustifolia*, and *L. x intermedia* have economic importance in the perfumery and fragrance industry. Some are widely used in aromatherapy, as they have antiseptic and antifungal properties. The Latin name *Lavandula* comes from the ancient use of this plant to perfume water for bathing, being derived from the Latin word *lavare*, meaning to be washed [101].

In this study, the authors examined recent studies to form a compilation of ethnomedicinal uses of *Lavandula* species in Turkish traditional medicine.

## 2. RESULTS

As a result of the study, the authors found that six *Lavandula* taxa (Table 1) and two multi-herbal formulas (Table 2) are used as herbal medicine in Turkish traditional medicine.

Table 1. Medicinal uses of *Lavandula* taxa in Turkish traditional medicine

Latin name	Local name	Parts	Preparation	Ailments treated/ Therapeutic effect	References
<i>Lavandula</i> sp. L.	Lavanta	Leaves	Infusion	Brain diseases	[69]
		-	-	Antispasmodic	[78]
		-	-	Antiseptic	[78]
		-	-	Expectorant	[78]
		-	-	Bronchitis	[78]
-	-	-	-	Flu	[78]
<i>L. angustifolia</i> Mill.	Lavanta	Flowers	Infusion	Psychological disorder	[8]
				Hepatitis	[8]
				Insomnia	[8, 11]
				Diuretic	[9, 11, 27, 79]
				Stress	[11]
				Stomach diseases	[11]
				Dyspepsia	[11]
				Carminative	[11]
				Hair care	[8]
				Skin care	[8]
				Diuretic	[13]
				Rheumatism	[13, 79]
				Migraine	[38]
				Rheumatism	[12]
		Essential oil	Migraine	[27]	
			Hair loss	[38]	
			Acne	[38]	
			Diuretic	[79]	
		Inflorescences	Infusion	Medicinal purpose	[23]
			Essential oil	Medicinal purpose	[23]
Seeds	-	Medicinal purpose	[23]		
Aerial parts	Infusion	Headache	[31, 70]		
		Rheumatism	[32, 70]		
		Depression	[70]		
Leaves, Flowers	Decoction	Hair loss	[70]		
	-	Medicinal purpose	[61]		
Branches, Leaves,	Decoction	Sedative	[73]		

		Flowers			
<i>L. angustifolia</i> subsp. <i>angustifolia</i> Mill.	Lavanta	Spica	Infusion	Gastrointestinal diseases	[24]
		Leaves, Stems	Infusion	Hepatoprotective	[47]
<i>L. stoechas</i> L.	Karabaş	Flowers	Infusion	Gastrointestinal diseases	[3]
				Antiseptic	[13]
				Painkiller	[13]
				Calmativ	[13]
				Medicinal tea	[36]
				Neural diseases	[40]
				Dizziness	[40]
			Antiurolihiatic	[54]	
			Decoction	Medicinal tea	[74]
			Inflorescence	Infusion	Painkiller
		Antiseptic			[79]
		Wound healing			[79]
		Stimulant			[79]
		Epilepsy			[79]
		Asthma			[79]
		Expectorant			[79]
		Urinary tract infections			[79]
		Sedative			[79]
		Heart-strengthening	[79]		
		Spica	Infusion	Gastrointestinal diseases	[24]
				Medicinal tea	[36]
			-	Diuretic	[58]
				Embolism	[58]
				Sedative	[58]
		Flowering branches	Infusion	Analgesic	[39]
				Carminative	[39]
				High cholesterol	[39]
				Rheumatism	[39]
Vasodilator	[39]				
Decoction	Antiurolihiatic		[54]		
	Headache		[76]		
	Stomachache		[76]		
	Antiurolihiatic		[76]		
-	Medicinal tea	[76]			
Leaves	Infusion	Cancer	[11]		
		Expectorant	[11]		
		Pharyngitis	[11]		
		Urinary diseases	[11]		
		Antiseptic	[11]		
		Analgesic	[11]		
		Disturbance of blood circulation	[11]		
		Vasodilator	[11]		
		Cardiovascular diseases	[11]		
		Cancer	[55]		
	Decoction	Digestive	[49]		
		Obesity	[49]		

				Antiuro lithiatic	[54]	
			Powdered and mixed with honey	Kidney diseases	[74]	
				Cardiovascular diseases	[74]	
		Aerial parts	Infusion	Essential oil	Painkiller	[1]
				Stomachache	[7]	
				Heart diseases	[7]	
				Painkiller	[45]	
				Cancer	[45]	
				Smoking cessation	[45]	
				Diabetes	[66]	
				Heart-strengthening	[70]	
				Arrhythmia	[70]	
				Epilepsy	[70]	
				Analgesic	[80]	
				Expectorant	[80]	
				Diuretic	[80]	
				Headache	[80]	
				Neural diseases	[80]	
				Insomnia	[80]	
				Hypertension	[80]	
		Inflamed wounds	[80]			
		Cataplasm	Painkiller	[45]		
		Decoction	Headache	[31]		
		-	Medicinal purpose	[61]		
		Whole plant	Infusion	Epilepsy	[15]	
				Insomnia	[15]	
				Cancer	[15]	
				Arteriosclerosis	[15]	
			Medicinal tea	[36]		
		Herbal water	Medicinal purpose	[23]		
		Leaves, Flowers	Infusion	Expectorant	[9]	
				Eczema	[9, 37]	
				Stomach ulcer	[20]	
				Medicinal tea	[22]	
Arteriosclerosis	[25]					
Heart palpitations	[25]					
Hypertension	[25]					
Headache	[25]					
Diabetes	[25]					
Decoction	Nervosity		[49]			
	Stethalgia		[49]			
	Epilepsy		[49]			
	Headache		[49]			
	Anodyne		[49]			
	Heart, blood stimulant		[49]			
	Hypertension		[49]			
	Throat diseases		[49]			
	Brain diseases	[56]				
	Embolism	[56]				
Gynecological diseases	[56]					
Leaves, Fresh shoots	Infusion	Heart-strengthening	[68]			
		High cholesterol	[68]			
		Arteriosclerosis	[68]			

				Cold and Flu	[68]
				Stimulant	[68]
				Stomach diseases	[68]
		Leaves, Flowering branches, Flowers	Infusion	Stomachache	[6]
				Cold and flu	[6]
				Atherosclerosis	[6]
				Brain tumor	[6]
				Sedative	[6]
				Insomnia	[6]
				Pleasure tea	[6]
				Medicinal tea	[6]
		Branches, Stems, Flowers	Infusion	Cardiovascular diseases	[8]
				Smoking cessation	[8]
				Stress	[8]
				Anxiety	[8]
				Epilepsy	[8]
				Tinnitus	[8]
				Painkiller	[8]
		Leaves, Stems, Flowers	Decoction and Rested	Cardiovascular diseases	[12]
				Cholesterol	[12]
		Branches, Leaves, Flowers	Decoction	Sedative	[73]
				Painkiller	[73]
		Flowers, Leaves, Aerial parts	-	Hemorrhoids	[51]
				Hypotensive	[51]
				Expectorant	[51]
				Headache	[51]
				Painkiller	[51]
				Antiseptic	[51]
				Cardiovascular diseases	[51]
				Neural diseases	[51]
				Embolism	[51]
				Memory consolidation	[51]
				Sinusitis	[51]
				High cholesterol	[51]
				Respiratory diseases	[51]
				Diabetes	[51]
				Stomachache	[51]
				Brain diseases	[51]
				Cancer	[51]
				Cold	[51]
				Bronchitis	[51]
				Cough	[51]
				Shortness of breath	[51]
				Heart-strengthening	[51]
				Insomnia	[51]
		Arteriosclerosis	[51]		
		Joint pain	[51]		
		Epilepsy	[51]		
			Infusion	Pleasure tea	[5]
				Medicinal tea	[60]
			Cataplasm	Analgesic	[5]
			-	Relaxation	[35]

				Stomachache	[48]
				Cardiovascular diseases	[48]
				High cholesterol	[48]
				Arteriosclerosis	[48]
				Cold	[48, 67]
				Asthma	[48]
				Immunostimulan	[48]
				Chest diseases	[52]
				Antidote	[52]
				Medicinal purpose	[59]
				Embolism	[60]
				Diuretic	[67]
				Rheumatism	[67]
				Itching	[67]
				Diabetes	[67]
<i>L. stoechas</i> subsp. <i>stoechas</i> L.	Karabaş	Flowers	Infusion	Cardiovascular diseases	[1]
				Medicinal tea	[62]
		Inflorescences	Infusion	Analgesic	[4]
				Sedative	[4]
				Insomnia	[4]
				High cholesterol	[4]
				Hypotensive	[4]
				Expectorant	[4]
				Multipurpose medicinal tea	[18]
				Stomach diseases	[43]
		Cold	[43]		
		Spica	Infusion	Headache	[19]
				Arteriosclerosis	[19]
		Flowering branches	Infusion	Stomach diseases	[17]
				Headache	[17, 31, 57]
				Cancer	[17]
				Cholesterol	[17, 57]
				Stomachache	[33, 57]
				Embolism	[57]
				Menstrual irregularity	[57]
				Antihypertensive	[57]
		Leaves	Infusion	Medicinal purpose	[23]
		Aerial parts	Infusion	Cardiovascular diseases	[2]
				Stomachache	[2, 33]
				Cold	[2]
				Shortness of breath	[2]
Immunostimulan	[2]				
Arteriosclerosis	[16]				
Embolism	[16]				
Asthma	[21]				
Prostate diseases	[29]				
Breast cancer	[55]				
-	Anemia		[30]		
	Hypertension	[50]			
	Sinusitis	[50]			
	Decoction	Stomachache	[33]		
Whole plant	Infusion	Stomachache	[14, 46]		

				Expectorant	[14]
				Medicinal tea	[44]
				Headache	[46]
				Cholesterol	[46]
				Hypertension	[46]
				Menstrual irregularity	[46]
				Cancer	[55]
		Leaves, Flowers	Decoction	Vasodilator	[10]
				Kidney stone	[10]
				Cardiovascular diseases	[10, 72]
				Asthma	[21]
				Embolism	[26]
			Medicinal tea	[26, 77]	
			Infusion	Arteriosclerosis	[34]
		Fatty liver		[34]	
		Hypertension		[34]	
		Headache		[34]	
		Insomnia		[34]	
		Leaves, Stems	Infusion	Migraine	[47]
				Embolism	[47]
				Urinary tract infections	[47]
		Flowers, Aerial parts	Infusion	Stomach diseases	[41, 64]
				Cardiovascular diseases	[41]
				High cholesterol	[41]
				Antispasmodic	[64]
		Leaves, Flowers, Pedicels	-	Cancer	[75]
				Blood thinner	[75]
				Vasodilator	[75]
Infusion	Painkiller		[75]		
	Expectorant		[75]		
-	-	Stomachache	[28]		
		Headache	[28]		
		Cholesterol	[28]		
		Menstrual pains	[28]		
		Hypertension	[28]		
		Medicinal purpose	[42]		
		Cancer	[55]		
		Diabetes	[66]		
<i>L. pedunculata</i> subsp. <i>cariensis</i> (Boiss.) Upson & S.Andrews	Karan	Flowering branches	Infusion	Cough	[53]
				Bronchitis	[53]
			Decoction	Antiurolithiatic	[53]
				Allergy	[53]
				Hair care	[53]
		Leaves	Infusion	Medicinal purpose	[23]
				Stomachache	[33, 71]
				Cold	[71]
		Aerial parts	Infusion	Embolism	[71]
				Glioma	[71]
		Whole plant	Herbal water	Medicinal purpose	[23]
		Flowers, Spica	Infusion	Stomach ulcer	[53]
				Stethalgia	[53]
				Cold	[53]
Heart-strengthening	[53]				

				Headache	[53]
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Table 2. Medicinal uses of Multi-herbal Formulas in Turkish traditional medicine

Latin name	Local name	Parts	Preparation	Ailments treated/ Therapeutic effect	References
<i>L. stoechas</i> subsp. <i>stoechas</i> L. + <i>Mentha pulegium</i>	Karabaş +Yarpuz	Leaves, Flowers +Whole plant	Infusion	Stomachache	[10]
				Bronchitis	[10]
				Soporific	[10]
<i>L. pedunculata</i> subsp. <i>cariensis</i> + <i>Origanum majorana</i> + <i>Mentha x piperita</i>	Karan +Mercan köşk +Nane	Whole plant +Whole plant +Whole plant	Infusion	Stomachache	[53]

### 3. CONCLUSION

This review includes six *Lavandula* taxa and two Multi-herbal formulas. The authors observed the highest number of medicinal uses in *L. stoechas*. Herbal medicines used by the local people are prepared as decoction, infusion, etc. The most commonly used plant parts are leaves, and flowers. In addition, individuals can use other aerial plant parts, such as inflorescences, flowering branches, spica, seeds, etc.

In both developed and developing countries, medicinal plants are used for therapeutic purposes. In many countries, several herbal medicines traditionally have been used to control and treat various types of pain along with chemical drugs. In addition, researchers have clinically verified some of these herbal medicine types for the relief of symptoms of back pain. Furthermore, this review includes some of the herbal medicines that have therapeutic activity for various types of back pain. This review can help other researchers to become more familiar with plants and explore their use in other diseases.

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