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REVIEW

The Medicinal Plants Traditionally Used Against Cardiovascular Diseases in Türkiye

Meltem Gulec[1], Zeynep Busra Erarslan[2*], Sukran Kultur[3]

[1]Istinye University, Faculty of Pharmacy, Department of Pharmacognosy, Istanbul, Türkiye
Istanbul University, Institute of Health Sciences, Department of Pharmacognosy, Istanbul, Türkiye
[2]University of Health Sciences, Hamidiye Vocational School of Health Services, Medical Promotion and Marketing Program, Istanbul, Türkiye
[3]Istanbul University, Faculty of Pharmacy, Department of Pharmaceutical Botany, Istanbul, Türkiye

* Corresponding Author: Zeynep Busra Erarslan, e-mail: zeynepbusra.erarslan@sbu.edu.tr

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Abstract
Since immemorial, humankind has benefited from plants as nutritient, medicine, cosmetic, or to make tools and shelters for itself. Historically, the trial-and-error method gathered traditional knowledge; practices were developed and sustained. It has been passed on from generation to generation to reach our day. This study aims to gather information on medicinal plants used traditionally against cardiovascular diseases in Türkiye before it is lost forever. In the library of Istanbul University, in the first place, the approachable sources have been scanned thoroughly. Plants' scientific name, Turkish name, family, used parts, method of use, and effects has been put together in a table. As a result, we composed a report of 129 plants from 43 families used for cardiovascular diseases. It has been concluded that of these, the most outstanding herbs are *Crataegus monogyna* Jacq., *Lavandula stoechas* L., *Melissa officinalis* L., *Tribulus terrestris* L., *Urtica dioica* L. and *Viscum album* L. Rosaceae, Lamiaceae and Asteraceae were the most used plant families. It has been detected that people mainly benefit from the leaves, aerial parts, fruit, and flowers of medicinal plants as infusion or decoction. Although the biological activity studies on the plants most used by the people support the use in cardiovascular diseases, more studies are needed to provide scientific evidence for folklore use, especially for *L. stoechas*. It is thought that this study may be a resource for developing future herbal medicines or treatments.
Keywords: Cardiovascular System, Ethnobotany, Medicinal Plant, Traditional Medicine, Türkiye

INTRODUCTION

The cardiovascular system consists of a closed system of organs and blood vessels that transports blood, oxygen, and nutrients throughout the body. It comprises the heart, blood vessels (arteries, veins, and capillaries), and the blood itself. The heart circulates blood through the blood vessels, which transport oxygen and nutrients to the tissues and organs of the body. Moreover, the blood eliminates waste materials and carbon dioxide from the tissues and organs, returning them to the heart and lungs for oxygenation.[1] The circulatory system affects almost every cell, tissue, organ, and system in the body. The term covers coronary heart diseases, cerebrovascular diseases, hypertension, peripheral arterial disease, rheumatic heart disease, congenital heart diseases, heart failure, and cardiomyopathies. Tobacco smoking, physical inactivity, an unhealthy diet, obesity, or diseases such as diabetes, hypertension, or dyslipidemia are significant factors that influence susceptibility to many diseases.[2]

By the turn of the 21st century, chronic diseases continued to plague the global population, while infectious diseases became less of a concern.[3] World Health Statistics indicate that an estimated 41 million deaths occurred due to noncommunicable diseases (NCDs), accounting for 71% of the total 57 million deaths in 2016. Most of these deaths were caused by the four main NCDs: cardiovascular disease, cancer, chronic respiratory disease, and diabetes. With 17.9 million records, deaths due to cardiovascular diseases account for 44% of all NCD deaths. If present trends persist, this number will increase to almost 23,6 million by 2030, and the studies indicate that the situation is especially severe in middle-income countries.[4] As a developing country in the Eastern Mediterranean, Türkiye, chronic diseases are

increasing due to the aging population and changing lifestyle.[5] According to the statistics from the Turkish Statistical Institute, cardiovascular diseases, which are the first among six diseases causing death, have been the leading cause of all deaths in Türkiye 36.8% in 2019, 37.8% in 2018, and 39.5% in 2017.[5,6]

Traditional medicine has been an essential part of healthcare in Türkiye for centuries, and numerous individuals continue to use traditional remedies to treat various health conditions, including cardiovascular diseases.[7,8] In a study conducted in Türkiye, researchers discovered that 51.3% of 193 hypertensive patients utilized herbal remedies, predominantly when feeling ailing.[9] Despite the need for additional research to evaluate these remedies' safety and efficacy, traditional medicine plays an essential role in Türkiye's healthcare system. However, urbanization and changes in lifestyle have pushed people away from nature, and traditional medical knowledge is vanishing. Therefore, transmitting this value to the scientific literature before its extinction is essential. Traditional medicine knowledge is valuable and merits scientific study before it is lost forever. As known, nearly three-quarters of the new medications that have been approved since 1981 were derived directly or indirectly from natural sources, and especially plants used in traditional medicine are potential sources for the modern pharmaceutical industry.[10,11]

MATERIALS AND METHODS

Study area

This study represents a compilation of ethnobotanical studies since 1991 conducted within Türkiye's borders.

Data collection

This study was prepared by searching theses at the National Higher Education Center and ethnobotanical surveys and related studies conducted in various parts of Türkiye with the goal of selecting regional plants used for cardiovascular diseases. Published research, books, doctorate dissertations, and master's theses were searched using scientific literature databases (Pubmed, Scopus, Google Scholar, Web of Science, SciFinder, Springer, and Elsevier). The International Plant Names Index (https://www.ipni.org/) was used to verify the scientific names of all taxa and families identified. Since synonym names were given in some published research, these alternative scientific names were also given in brackets. Related information about medicinal plants, such as botanical, family, and vernacular names; used parts; preparation methods; and administration, is presented in Table 1. Moreover, the most cited plant families, the most cited medicinal plants, and the most used plant parts are presented in graphics. Finally, pharmacological studies were reviewed to confirm the traditional use of the most cited plant taxa.

Table 1. List of the medicinal plants traditionally used against cardiovascular diseases in Türkiye.

Plant species	Vernacular name (in Turkish)	Family	Plant part(s) used	Preparation	Use
***Achillea crithmifolia* Waldst. et Kit.**	Civanperçemi, Mayasıl otu	Asteraceae	Aerial part	Infusion/ Internal	Heart diseases[20]
***Achillea millefolium* L.**	Ayvadene, Kedi Tırnağı	Asteraceae	Whole plant	Infusion/ Internal	Heart diseases[21]
			Leaf, Flower	Crushed, Decoction/ Internal	Cardiovascular diseases[22]
***Achillea nobilis* L.**	Ayvadana, Aslanbıyığı, Civanperçemi	Asteraceae	Leaf	Kept in olive oil/ Internal	Heart diseases[23]
			Aerial part	Infusion, Decoction/ Internal (A teacup)	Cardiotonic[24]
***Achillea santolinoides* subsp. *wilhelmsii* (K.Koch) Greuter (Syn*: Achillea wilhelmsii* C. Kocu)**	Kedicırnağı, Keditırnağı, Tilki otu	Asteraceae	Aerial part	Infusion/ Internal	Atherosclerosis[25]
***Adiantum capillus-veneris* L.**	Pore fatme, Şaar, Cıbbar	Pteridaceae	Aerial part	Infusion/ Internal	Heart diseases[26]
***Aegopodium podagraria* L.**	Baldıran, Mendek, Mide otu	Apiaceae	Leaf, Petiole	Cooked, Decoction, Pickled/ Internal	Cardiovascular diseases[22]
***Alchemilla caucasica* Buser**	Dokuztepe, Aslan pençesi	Rosaceae	Flower, Leaf, Whole plant	Decoction, Infusion, Raw/ Internal	Cardiovascular diseases[22]
***Allium cepa* L.**	Soğan	Amaryllidaceae	Bulb	Maceration/ Internal	Blood-thinner, Good for heart[27]
***Allium sativum* L.**	Sarımsak	Amaryllidaceae	Bulb	Crushed/ Internal	Heart diseases[28]
***Odontarrhena pateri* (Nyár.) Španiel, Al-Shehbaz, D.A.German & Marhold (Syn: *Alyssum pateri* Nyár.)**	Keselmehmut	Brassicaceae	Aerial part	Decoction/ Internal	Heart diseases[29]

***Prunus dulcis* (Mill.) D.A.Webb (Syn*: Amygdalus communis* L.)**	Tatlı badem	Rosaceae	Seed	Raw/ Internal	Heart diseases[30,31]
***Anthemis cretica* L.**	Papatya	Asteraceae	Flower	Infusion/ Internal	Vasodilator[32]
***Asparagus acutifolius* L.**	Tilki kuyruğu, Kedikuyruğu, Kediyan, Mıcık, Sarmaşık, Kuşkonmaz, Melcü	Asparagaceae	Aerial part	Roasted, Cooked/ Internal	Heart diseases[23]
				Boiled/ Internal	Heart diseases[33]
				Decoction/ Internal	Heart diseases[34]
***Asparagus officinalis* L. (Syn: *Asparagus longifolius* Fisch. ex Steud)**	Gırguni	Asparagaceae	Root	Infusion/ Internal (A cup in the morning on the empty stomach)	Heart diseases[35]
***Astragalus gummifer* Labill.**	Günizer, Kitre, Türk Kitresi	Fabaceae	Root	Decoction (After peeling)/ Internal	Heart diseases[35]
***Bellis perennis* L.**	Mayıs papatyası	Asteraceae	Flower	Decoction, Infusion/ Internal	Cardiovascular diseases[22]
***Berberis crataegina* DC.**	Karamuk, Kızamuk, Karamık	Berberidaceae	Leaf	Raw/ Internal	Good for heart[36]
				Marmalade/ Internal	
***Sinapis nigra* L. (Syn: *Brassica nigra* L.)**	Ardal, rapisa, radika	Brassicaceae	Seed	Wrapped in a cloth and put into grape juice, wait 1-2 months, a glass per day/ Internal	Heart diseases, Vascular diseases[37]
***Capsella bursa-pastoris* (L.) Medik.**	Çoban Çantası	Brassicaceae	(Flowering) Branch	Decoction/ Internal	Arteriosclerosis[38]
Centaurea calcitrapa L.	Twelu	Asteraceae	Aerial part	Decoction/ Internal (A teaglass, two times a day)	Heart diseases, Embolism[33]
***Prunus avium* (L.) L. (Syn: *Cerasus avium* (L.) Moench)**	Kiraz, Napolyon Kirazı	Rosaceae	Fruit stalk	Decoction (Dried form)/ Internal	Heart diseases[23]
***Ceratonia siliqua* L.**	Keçiboynuzu	Fabaceae	Broad bean	Infusion/ Internal	Atherosclerosis[39]
***Cichorium intybus* L.**	Mavi çiçek, Çıtımık, Hindiba	Asteraceae	Aerial part	Decoction/ Internal	Heart diseases[40]
***Cichorium pumilum* Jacq.**	Sütlü Ot, İndiba Otu	Asteraceae	Flowering branch	Infusion/ Internal (3 times a day, before meals)	Cardiotonic[41]
***Cornus mas* L.**	Kızılcık	Cornaceae	-	-	Heart diseases[43]
***Cota tinctoria* (L.) J. Gay**	Giyayezer	Asteraceae	Aerial part	Infusion/ Internal	Heart diseases[26]
***Crataegus ambigua* C.A. Mey. ex A.K. Becker**	Gunc	Rosaceae	Fruit	Infusion/ Internal (A cup on empty stomach in the morning)	Heart disorder, Embolism[33]
***Crataegus azarolus* var. *aronia* L. (Syn: *Crataegus aronia* (L.) Bosc. ex DC.)**	Alıç, Ardıç, Andırın, Sarı Alıç, Ahlat	Rosaceae	(Young) Leaf, (Flowering) Shoot, Flower	Infusion/ Internal	Heart diseases[25,40,44,45]
			Fruit	Decoction/ Internal	
				Raw/ Internal	
***Crataegus azarolus* L.**	Alıç, Kızılalıç, Sinz, Sez, Risok, Roğık	Rosaceae	Leaf, Fruit, Flower	Infusion, Decoction/ Internal (2-3 times a day for 3-5 days)	Cardiovascular diseases, Heart diseases[46,47]
				Fruit/ Internal (Handful for 3-8 days)	
			Flower, Fruit	Infusion, Decoction/ Internal (A teaglass two times a day or a cup in the evening)	Heart diseases[33]
			Fruit	Raw/ Internal	Heart diseases[28]
***Crataegus x bornmuelleri* Zabel ex K. I. Chr. & Ziel**	Alıç	Rosaceae	Fruit, Flower, Leaf	Decoction/ Internal	Heart diseases[48]
***Crataegus meyeri* Pojark.**	Alıç	Rosaceae	Leaf, Trunk bark	Decoction/ Internal	Cardiovascular diseases[25]
			Fruit, Wood	-	Vasodilator[49]
***Crataegus monogyna* Jacq.**	Alıç, Yemişen, Kızılcık, Kızılalıç, Kırmızı Alıç, Adi Alıç, Dikenli Alıç, Yemiş, Beyaz Diken, Ekşi Muşmula, Edram, Geviş, Yemişgen, Yemişgen çalısı, Arıç, Cherven glog,	Rosaceae	Flower	Infusion (dried)/ Internal (2-3 teacups per day)	Heart diseases[36,42,44,50]
			Fruit, Flower	Decoction/ Internal (1-2 teacups per day)	Vasodilator, Circulation accelerator[51]
					Cardiovascular diseases[29,42,56,57,58]
			Fruit	Raw (dried)/ Internal (Regularly)	Heart diseases[23]
			(Young) Leaf, (Flowering) Shoot, Flower	Infusion/ Internal	Cardiovascular diseases[25]

	Glog, Kara Alıç, Enişen, Geyikdikeni, Gırgat, Keçialıcı, Sürsülük, Öküzgöbeği, Kocakarıyemişi		Fruit	Raw/ Internal	Vasodilator[32,52]
			Leaf, Flower	Infusion/ Internal	Heart diseases[53,54,55]
			Stem	–	Cardiovascular diseases[59]
			Aerial part	Infusion/ Internal	Cardiovascular diseases[60]
***Crataegus orientalis* Pall. ex M. Bieb.**	Alıç, Dikenli Alıç, Alıç, Alış, Yemiş, Alıç Toburcuğu, Alış Topurcuğu, Sevçik, Sarı Alıç, Beyaz Alıç, Sinz, Sez, Risok, Roğık	Rosaceae	Fruit, Leaf	Decoction (dried)/ Internal	Vasodilator, Heart diseases[23]
			Root	Decoction/ Internal	Heart diseases[25]
			Flower	Infusion/ Internal	Cardiovascular diseases, Heart diseases[25,61]
				Infusion/ Internal (A cup on empty stomach in the morning)	Heart diseases[33]
			Flower, Stem bark	Infusion/ Internal (A cup on empty stomach in the morning)	Heart diseases[33]
			Flower, Shoot	Decoction/ Internal	Cardiovascular diseases[36]
			Fruit	Decoction, Raw/ Internal	Heart diseases[62]
			Fruit	Raw/ Internal	Cardiotonic, Heart diseases[28]
***Crataegus pentagyna* Waldst. & Kit. ex Willd.**	Yemişen	Rosaceae	Fruit	Raw/ Internal	Heart diseases[63]
***Crataegus rhipidophylla* Gand.**	Alıç	Rosaceae	Fruit	Infusion, Raw, Jam/ Internal	Cardiovascular diseases[22]
***Crataegus azarolus* var. *pontica* (Koch) K.I.Chr. (Syn: *Crataegus pontica* K.Koch)**	Bilan	Rosaceae	Fruit	Decoction/ Internal	Heart diseases[64]
***Crataegus monogyna* Jacq. (Syn: *Crataegus stevenii* Pojark.)**	Alıç	Rosaceae	Fruit, Flower	Decoction/ Internal (1-2 teacups per day)	Vasodilator, Circulation accelerator[61]
***Crataegus orientalis* subsp. *szovitsii* (Pojark.) K.I.Chr. (Syn: *Crataegus szovitsii* Pojark.)**	Alıç	Rosaceae	(Young) Leaf, (Flowering) Shoot, Flower	Infusion/ Internal	Heart diseases[25]
			Fruit	Raw/ Internal	Heart diseases[25]
			Leaf, Trunk bark	Decoction/ Internal	Heart diseases[25,55]
			Branch, Fruit, Leaf	Infusion/ Internal	Heart diseases[55]
			Flower, Leaf	Infusion/ Internal	Cardiovascular diseases[65]
***Crataegus tanacetifolia* (Lam.) Pers.**	Alıç	Rosaceae	Flower	Infusion/ Internal (A teacup two times a day)	Atherosclerosis[66]
***Cuscuta babylonica* Aucher ex Choisy**	Iqşut	Convolvulaceae	Aerial part	Decoction/ Internal	Heart diseases[26]
***Cynodon dactylon* (L.) Pers.**	Ayrık, Ayrık Otu	Poaceae	Aerial part	Infusion/ Internal	Atherosclerosis[25]
			Root	Infusion, Decoction/ Internal	Arteriosclerosis[67]
***Cydonia oblonga* Miller**	Ayva	Rosaceae	Seed	Decoction/ Internal	Heart diseases[68]
			Fruit	Raw/ Internal	Cardiovascular diseases[65]
***Cyperus rotundus* L.**	Şembelik	Cyperaceae	Tuber	Raw/ Internal	Heart diseases[47]
***Ephedra major* Host.**	Deniz üzümü	Ephedraceae	Aerial part (without flowers)	Tea/ Internal (A cup three times a day for 1-3 weeks)	Cardiotonic[24]
***Eriolobus trilobatus* (Labill. ex Poir.) Roem.**	At Elması	Rosaceae	Fruit	Decoction/ Internal	Cardiovascular diseases[40]
***Erodium cicutarium* (L.) L'Hér.**	İğnelik Otu, Filket Otu, Siğil Otu, Dönbaba, İğnelik	Geraniaceae	Stem	Infusion/ Internal (warm)	Heart diseases[70]
***Equisetum arvense* L.**	Kırkkilit, Gırkkilit, Kırkkilit Otu, Gırkkilit Otu	Equisetaceae	Leaf	Infusion/ Internal	Heart palpitations[23]
***Equisetum ramosissimum* Desf.**	Kirkkilit otu, Ulu	Eqisetaceae	Aerial part	Infusion/ Internal (A glass a day regularly)	Atherosclerosis[66]

***Fumaria officinalis* L.**	Şahtere	Papaveraceae	(Flowering) Branch	Tea/ Internal (warm)	Arteriosclerosis[70]
***Glycyrrhiza glabra* L.**	Mekik Kökü, Meyan, Piyan, Payam, Meyan Kökü, Bıyan	Fabaceae	Root	Decoction/ Internal	Heart diseases[29]
***Hedera helix* L.**	Hebil, Sarmaşık, Yabani Tevek	Araliaceae	Leaf	Infusion/ Internal	Heart diseases[40]
***Hypericum perforatum* L.**	Binbirdelikotu, Delikli Kılıçotu, Sarı Kantaron Otu, Jalt Kantarion	Hypericaceae	Flower	Infusion/ Internal	Cardiovascular diseases[25,55]
			Aerial part	Decoction (dried)/ Internal	Cardiovascular diseases[42]
***Hypericum triquetrifolium* Turra**	Kızılcık, Kızılcık Otu, Kantoron Otu, Sarı Kantoron, Aran, Ğırsile	Hypericaceae	(Flowering) Aerial part	Infusion/ Internal	Heart diseases[23]
			Aerial part	Decoction/ Internal	Arteriosclerosis[72]
				Infusion/ Internal	Cardialgia[72]
***Juglans regia* L.**	Adi Ceviz	Juglandaceae	Fruit	Raw (dried)/ Internal (regularly)	Cardiovascular diseases[23]
				Raw (dried)/ Internal (on empty stomach)	Heart palpitations[73]
			(Immature) Fruit	Raw/ Internal	Heart diseases[74]
			Seed	Raw/ Internal (3 pieces per day)	Blood-pressure regulator[41]
				Maceration/ Internal	Cardiovascular diseases[65]
			Seed	Raw/ Internal (Five seeds a day)	Heart diseases[69]
***Juniperus communis* L.**	Andız, Adi Ardıç	Cupressaceae	Root	Decoction/ Internal	Heart diseases[75]
***Juniperus drupacea* Labill.**	Andız	Cupressaceae	Fruit	Infusion/ Internal	Heart diseases[76]
***Juniperus excelsa* M. Bieb.**	Andı Adi Ardıç	Cupressaceae	Fruit	Pulverized, added honey/ Internal (A spoonful per 10 hours)	Cardiovascular diseases[52]
***Juniperus oxycedrus* L.**	Mal ardıcı, Akardıç, Ardıç, Kızıl ardıç, Kızılcık	Cupressaceae	Cone	Crushed/ Internal (With honey)	Heart failure[77]
				Crushed/ Internal	Heart diseases[78]
			(Fresh) Fruit	Decoction, Raw/ Internal	Heart diseases[37]
***Lactuca serriola* L.**	Eşek marulu	Asteraceae	Leaf	Infusion/ Internal	Cardiovascular diseases[65]
***Lactuca virosa* L.**	Acı Marul	Asteraceae	Leaf	Raw/ Internal	Heart diseases[79]
***Laurus nobilis* L.**	Defne, Tehnel	Lauraceae	(Fresh) Flower, Leaf	Infusion/ Internal (Once a day)	Vasodilator[53]
			Leaf	Decoction/ Internal (a cup per day)	Heart diseases[58,80]
***Lavandula stoechas* L.**	Karabaş, Karabaş Kekiği, Çalı kekiği, Kekik, Mor Kekik, Karahan, Karabaş Otu, Sargan Otu	Lamiaceae	(Flowering) Branch	Infusion/ Internal	Atherosclerosis[23,39]
					Cardiovascular diseases[21]
			Leaf	Crushed with honey (dried)/ Internal (One spoonful after meals)	Cardiovascular diseases[81]
			Flower, Leaf	Decoction/ Internal	Cardiovascular diseases[27]
				Infusion/ Internal (2-3 times daily)	Tachycardia[82]
			Stem	Tea/ Internal (2-3 times a day)	Vasodilating[70]
			Flower	Infusion/ Internal	Cardiovascular diseases[45]
			Aerial part	Infusion/ Internal (A glass three times a day)	Heart diseases, Atherosclerosis[57,70,83]
				Decoction/ Internal	Heart diseases[84]
***Lycopersicon esculentum* Mill.**	Domat, Domates	Solanaceae	Fruit	Raw/ Internal (regularly)	Cardiac hypertrophy[23]
***Malva neglecta* Wallr.**	Ebegümeci, Doğnuk, Hiru	Malvaceae	Leaf, Root, Stem	Infusion/ Internal	Heart diseases[44]
***Malva sylvestris* L.**	Ebegömeci, Ebegümeci, Gömeç, Ebemgümeci	Malvaceae	Fresh stem	Infusion/ Internal	Atherosclerosis[23]
			Flower	Infusion/ Internal	Heart diseases[21,85]
***Marrubium anisodon* K.Koch**	Elbir otu	Lamiaceae	Aerial part	-	Blood-pressure regulator[49]

***Matricaria aurea* (Loefl.) Sch.Bip.**	Beybunıc, Gayeka, Seva, Gihake Seva	Asteraceae	Aerial part	Decoction/ Internal	Heart diseases[72]
***Matricaria chamomilla* L.**	Papatya, Papatya Otu, Papatça, Pobeş, Koyungözü	Asteraceae	Aerial part	Infusion/ Internal	Atherosclerosis[23]
			Capitulum	Infusion/ Internal	Heart diseases[57]
***Medicago arabica* (L.) Huds.**	Bıtırak	Fabaceae	Aerial part	Infusion/ Internal (regularly)	Cardiovascular diseases[23]
***Medicago minima* (L.) Bartal.**	Gurnik	Fabaceae	Branch (with fruit)	Infusion/ Internal (In the mornings on the empty stomach)	Heart diseases[86]
***Medicago orbicularis* (L.) Bartal.**	Düğmelik	Fabaceae	Seed	Infusion/ Internal	Heart diseases[87]
***Melissa officinalis* L.**	Oğul otu, Saçkıran, Yabanidereotu, Yabanısırganı, Limonotu, Melisa, Turunçcuk	Lamiaceae	Aerial part	Decoction/ Internal	Vasodilator[40,88]
				Infusion/ Internal (Half of a teacup twice a day for 20 days)	Atherosclerosis, Embolism[20,39,40]
					Heart diseases[40]
				Infusion (dried)/ Internal	Heart diseases like palpitations, Heart problems[23,69]
			Leaf, Flower	Infusion (dried)/ Internal	Good for heart[27]
				Decoction/ Internal (3-4 times a day)	Vasodilator[39]
			Leaf	Infusion/ Internal	Heart palpitations[57]
				Decoction/ Internal (before breakfast)	Arteriosclerosis[41,82]
				Decoction/ Internal (A cup of the plant two times a day)	
				Infusion/ Internal (Couple times daily)	Cardiovascular diseases[89]
***Melissa officinalis* subsp. *inodora* Bornm.**	Pung	Lamiaceae	Leaf, stem, flower, aerial part	Decoction/ Internal	Heart diseases[47]
***Mentha x piperita* L.**	Nane, Bahçe Nanesi, Nana	Lamiaceae	Aerial part	Raw, Tea, Spice/ Internal	Heart diseases (Preventive)[23]
***Mentha longifolia* subsp. *typhoides* (Briq.) Harley**	Pung, Su yarpuzu	Lamiaceae	Whole plant	Infusion/ Internal	Heart diseases[90]
***Momordica charantia* L.**	Kudretnarı, Cennet Narı, Çenet Narı, Cenet Narı	Cucurbitaceae	Fruit	Mashed and kept in olive oil/ Internal	Atherosclerosis[23]
***Morus alba* L.**	Beyaz dut	Moraceae	Fruit	Raw/ Internal	Heart strengthener[53]
***Myrtus communis* L.**	Yaban mersini	Myrtaceae	-	-	Heart strengthener[43]
***Nasturtium officinale* R.Br.**	Su Teresi, Gerdeme, Kerdeme, Sumancası, Çakandura	Brassicaceae	Stem (with leaf)	Decoction/ Internal	Heart-rhythm regulator[70]
			Leaf	Raw/ Internal	Heart stress[91]
***Olea europaea* L.**	Zeytin, Zeytin Ağacı, Gemlik Zeytini, Trilya, Eşek Zeytini, Domat, Yasemin, Edremit, Taze Fışkın	Oleaceae	(Young) Leaf, (Flowering) Shoot, Flower	Infusion/ Internal (Twice a day after meals)	Atherosclerosis[23]
			Leaf	Decoction/ Internal	Cardiovascular diseases[27,70]
				Chewed	Heart-rhythm regulator[70]
				Decoction (32 pieces of it)/ Internal	Heart diseases[87]
			Fruit, Leaf	Infusion/ Internal (One cup)	Heart diseases[70]
***Onobrychis megataphros* Boiss.**	Gurnik, Gurnuk	Fabaceae	Aerial part	Decoction (dried)/ Internal (A cup in the mornings on the empty stomach)	Good for heart, Atherosclerosis[92]
***Onosma isauricum* Boiss. & Heldr.**	Adaçayı	Boraginaceae	Aerial part	Infusion/ Internal	Cardiovascular diseases[25,55]
***Origanum onites* L.**	Kırkbaş Kekik, Tokalıkekik	Lamiaceae	Aerial part	Infusion/ Internal	Heart palpitations[23]
***Origanum vulgare* L.**	Kaya Kekiği, Taş Kekik, Kokulu Kekik, Sarı Kekik	Lamiaceae	Aerial part	Infusion/ Internal	Heart palpitations[23]
					Vasodilator[93]
***Paliurus spina-christi* Mill.**	Çaltı, Karaçalı	Rhamnaceae	Fruit	Infusion/ Internal	Heart diseases[57]
				Decoction/ Internal	Blood-pressure regulator[41]

					Heart diseases[20]
					Atherosclerosis[66]
***Papaver argemone* L.**	Gelincik, Gelneli, Gelineli, Lale Otu, Kelemli, Kapurcuk	Papaveraceae	Seed	Infusion (crushed)/ Internal	Cardiovascular diseases[23]
***Papaver bracteatum* Lindl.**	Haşhaş, Adamağusu	Papaveraceae	Seed	Raw/ Internal	Heart diseases[35]
***Papaver rhoeas* L.**	Gelincik, Kamacık, Kağma, Aşotu	Papaveraceae	Root	Roasted/ Internal	Heart diseases[45]
			Flower	Infusion/ Internal	Anti-arrhythmic[41]
			Leaf	Cooked/ Internal	Heart diseases[69]
***Papaver somniferum* L.**	Haşhaş, Haşeş, Haşgeş	Papaveraceae	(Fresh) Leaf	Raw/ Internal	Vasodilator[79]
***Phlomis armeniaca* Willd.**	Adaçayı	Lamiaceae	Aerial part	Infusion/ Internal	Cardiovascular diseases[25,55]
***Phyllitis scolopendrium* L.**	Geyikdili eğreltisi	Aspleniaceae	Aerial part	Decoction/ Internal	Arteriosclerosis[94]
***Alkekengi officinarum* Moench (Syn: *Physalis alkekengi* L.)**	Altın Çilek, Güveyfeneri	Solanaceae	Leaf, Fruit	Infusion/ Internal	Heart diseases[44]
***Pinus brutia* Ten.**	Çam, Şam, Kızılçam	Pinaceae	Mucilage	Boiled with olive oil and applied on the desired area with massage/ External	Arteriosclerosis[75]
***Pinus pinea* L.**	Fıstık çamı	Pinaceae	Branch tip	Infusion/ Internal	Vasodilator[39]
***Plantago lanceolata* L.**	Pel hewes, Pelonbaş, Omulwaş, Omınwaş	Plantaginaceae	Leaf	Infusion/ Internal (A cup on empty stomach in the morning)	Embolism[33]
			Leaf	Decoction, Fresh, Crushed/ Internal	Cardiovascular diseases[22]
***Plantago major* L.**	Sinir otu, Damarlıot, Damarotu, Balazağa, Çıban Otu, Sinirli Ot, Pel hewes, Pelonbaş, Omulwaş, Omınwaş	Plantaginaceae	Leaf	Decoction (with leaves of Mentha sp. and Urtica sp.)/ Internal	Vasodilator[88]
				Decoction/ External (Compress)	Embolism[33]
			Aerial part	Infusion, Decoction/ Internal	Cardiovascular diseases[67]
***Platanus orientalis* L.**	Çınar	Platanaceae	Leaf	Decoction/ Internal	Cardiovascular diseases, Heart diaeases[22,47]
***Portulaca oleracea* L.**	Pirpirim, Semizotu, Parpar	Portulacaceae	Stem, Leaf	Raw/ Internal	Heart diseases[44]
			Aerial part	Infusion, Decoction/ Internal (A teaglass after the meal, drink 1 cup on empty stomach in the morning)	Heart diseases[33]
***Prunus cerasifera* Ehrh. (Syn: *Prunus divaricata* Ledeb.)**	Delierik, Dağ Eriği	Rosaceae	(Raw) Fruit	Raw/ Internal (Handful daily)	Cardiovascular diseases[23]
***Pyrus elaeagnifolia* Pall.**	Ahlat, Ağlat, Yaban armutu, Dağ armutu	Rosaceae	Flower	Decoction/ Internal (A glass once a day)	Atherosclerosis[66]
***Punica granatum* L.**	Nar	Lythraceae	Fruit	Juice/ Internal (A glass daily)	Heart-rhythm regulator[75]
					Atherosclerosis[66]
***Quercus brantii* Lindl.**	Dara berru, Berru	Fagaceae	Leaf, Branch, Flower, Seed	Decoction, Fresh/ Internal	Good for heart[47]
***Rheum ribes* L.**	Ribes, Kap, Işgın	Polygonaceae	Aerial part, Root	Infusion/ Internal (A cup on empty stomach in the morning)	Heart diseases[33]
***Rosa canina* L.**	Kuşburnu, İtburnu, İtgülü, Yaban Gülü, Kozalak, Kozalak Ağacı, Yabani Gül, Gül Bubusu	Rosaceae	Fruit	Decoction/ Internal	Heart diseases[23]
				Decoction (with hawthorn)/ Internal	Heart diseases[70]
				Infusion/ Internal	Heart diseases[53]
			Hypanthium	Decoction/ Internal	Arteriosclerosis[41]
			(Flowering) Branch	Infusion/ Internal	Cardiovascular diseases, Embolism[70]
***Rosa foetida* Herrm.**	Menderis	Rosaceae	Fruit	Decoction/ Internal	Cardialgia[72]
				Infusion/ Internal	Cardialgia[72]
***Salvia rosmarinus* Schleid. (Syn: *Rosmarinus officinalis* L.)**	Biberiye, Biberiye Otu, Kuşdili, Kuşdili Otu	Lamiaceae	Leaf	Infusion/ Internal (Mornings, after a cup of warm lemon juice)	Heart diseases[88]
			Branch with leaves	Infusion/ Internal	Heart diseases[57]

***Rubus canescens* DC.**	Böğürtlen, Diken, Karamuk, Mora, Hamdüspara, Garantı, Garaltı,	Rosaceae	Branch	Decoction (With *Plantago sp*., *Urtica sp*. and *Melissa officinalis*)/ Internal	Atherosclerosis[88]
			Flowering shoot	Decoction/ Internal	Atherosclerosis[39]
***Rubus idaeus* L.**	Çitir, Temel üzümü	Rosaceae	Root	Decoction/ Internal	Heart diseases[61]
***Rubus sanctus* Schreb.**	Orman, Orman Üzümü, Orman Gülü, Gür, Kür, Kür Üzümü, Gür Üzümü, Kocakız Kürü, Gocagız Gürü, Böğürtlen, Böğürtlen çalısı, Gülleğen Dikeni	Rosaceae	Fruit	Raw/ Internal	Atherosclerosis[23]
					Cardiovascular diseases[25,34,55]
			(Thin and fringe) Root	Infusion/ Internal	Cardialgia[44]
					Heart diseases[34]
***Rumex crispus* L.**	Labada	Polygonaceae	Lower leaf	Infusion/ Internal	Heart diseases[44]
***Rumex* sp.**	Kalmık çayı, Çerkez cayı	Polygonaceae	Aerial part	Decoction/ Internal	Cardiovascular diseases[60]
***Salix alba* L.**	Söğüt	Salicaceae	Leaf	Decoction/ Internal	Arteriosclerosis[55]
***Salvia cryptantha* Montbret & Aucher ex Bentham**	Ada çayı, Ballık Otu, Çalba, Kayışkıran, Kokulu Ot, Sarı Şabla, Şabla	Lamiaceae	Aerial part	Infusion/ Internal	Cardiovascular diseases[25,55]
***Salvia aethiopis* L.**	Karakoyun Teği	Lamiaceae	Aerial part	Infusion, Decoction/ Internal	Heart diseases[67]
***Salvia hypargeia* Fisch. & C.A.Mey.**	Iccak otu	Lamiaceae	Aerial part, Sap	Infusion/ Internal	Heartstroke[95]
***Salvia multicaulis* Vahl.**	Çaya çiyan	Lamiaceae	Leaf, flower, aerial part	Decoction/ Internal	Reducing heart attack risk[47]
***Sambucus ebulus* L.**	Yir otu, Ayıboğan	Adoxaceae	Seed	Raw/ Internal	Atherosclerosis[40]
			Fruit	Kept in sugar for 40 days, drunk the resulting water on the empty stomach in the mornings.	Heart diseases[42]
***Satureja cuneifolia* Ten.**	Dağkekiği, Karakekik, Arı kekiği	Lamiaceae	Aerial part	Tea/ Internal (A teacup three times a day for 1-2 weeks)	Cardiotonic[24]
***Satureja spicigera* (K. Koch) Boiss.**	Kekik, zımpara	Lamiaceae	Leaf	Infusion/ Internal (A cup in the mornings on the empty stomach)	Heart diseases[96]
***Sideritis libanotica* subsp. *linearis* (Benth.) Bornm.**	Dağ çayı	Lamiaceae	Aerial part	-	Vasodilator[49]
***Sisymbrium altissimum* L.**	Yabani hardal	Brassicaceae	Flower, Leaf	Raw/ Internal	Vasoconstrictive[79]
***Torminalis glaberrima* (Gand.) Sennikov & Kurtto (Syn: *Sorbus torminalis* (L.) Crantz)**	Geyikelması, Dağelması, Kegelması	Rosaceae	Fruit, Leaf	Decoction/ Internal	Heart diseases[31]
			Fruit	Raw/ Internal	Heart diseases[63]
***Aria umbellata* (Desf.) Sennikov & Kurtto (Syn: *Sorbus umbellata* (Desf.) Fritsch)**	Geyikelması	Rosaceae	Leaf	Decoction/ Internal	Arteriosclerosis[77]
***Spinacia oleracea* L.**	Ispanak	Amaranthaceae	Leaf	Raw/ Internal	Heart diseases[79]
			Leaf	Cooked/ Internal	Cardiovascular diseases[22]
***Stachys sylvatica* L.**	Hamsırgan	Lamiaceae	Aerial part	Tea/ Internal Infusion/ Internal (A teacup, twice a day)	Heart diseases[48,102]
***Styrax officinalis* L.**	Ayı Fındığı, Günlük	Styracaceae	Fruit seed	Raw/ Internal	Heart diseases[70]
***Tamarix smyrnensis* Bunge**	Ilgın	Tamaricaceae	Stem bark	Decoction/ Internal	Cardiovascular diseases[78]
***Tamus communis* L.**	Acı ot, Sarmaşık, Vicirne, Mıcır, Mıcık, Bıcık, Bıcık Otu, Kapırcık, Kapurcuk, Kedien, Kediyen	Dioscoraceae	Flower	Cooked (in olive oil)/ Internal	Atherosclerosis[23]
***Teucrium chamaedrys* L.**	Kırmızı Ot, Kalp Otu, Dağ kekiği	Lamiaceae	Whole plant	Decoction/ Internal (Half of a teacup, 3 times per day)	Cardiovascular diseases[50]
			Aerial part	Decoction/ Internal	Heart diseases[86]
				Infusion/ Internal	Arteriosclerosis[97]

					Heart diseases[78]
***Teucrium polium* L.**	Oğul Otu, Anam Babam Kokusu, Koyun Otu, Yavşan	Lamiaceae	Root	Infusion/ Internal	Heart diseases[21,76]
***Thymbra spicata* L.**	Karabaş otu, Dağ çiçeği, Zahter	Lamiaceae	Aerial part	Infusion/ Internal	Heart diseases, Arteriosclerosis, Cardiac deficiency[83,97]
			Leaf, Flower	Infusion/ Internal	Tachycardia[82]
***Thymus longicaulis* C. Presl**	Kekik otu	Lamiaceae	Whole plant	Decoction/ Internal	Blood-pressure regulator[98]
***Thymus sipyleus* Boiss.**	Kekik	Lamiaceae	Aerial part	Infusion/ Internal	Cardiovascular diseases[25,55]
***Tilia platyphyllos* subsp. *corinthiaca* (Bosc ex K.Koch) Pigott (Syn: *Tilia rubra* DC.)**	Ihlamur	Malvaceae	Flower, Bract	Infusion/ Internal	Tachycardia[82]
***Tragopogon reticulatus* Boiss. & A. Huet**	Sinza	Asteraceae	Aerial part	Raw/ Internal	Cardialgia[99]
***Tribulus terrestris* L.**	Diken, Çoban Çökerten, Dadaş Otu, Demir Dikeni, Bitirak, Pıtırak, Yeşilpıtrakotu, Deve çökerten, Çakır dikeni, Gwerçal, Gerçal, Çobankalkıtan, Çobankalgıdan, Çökelek	Zygophyllaceae	Whole plant	Infusion, Decoction/ Internal (Kept a night long in the cold before use)	Atherosclerosis, Heart diseases[50]
				Decoction/ Internal (A glass once a day)	Cardiovascular diseases, Atherosclerosis[66]
			Aerial part	Decoction/ Internal	Cardiovascular diseases[25,34,54,60]
					Atherosclerosis[25,38]
					Heart attack[38]
				Infusion/ Internal	Cardiovascular diseases[55]
			Aerial part, Fruit	Decoction/ Internal (3 times a day) Infusion/ Internal	Heart diseases[37]
			Leaf, Fruit	Infusion/ Internal (A teacup, twice a day)	Cardiovascular diseases, Cardialgia[33,44]
			Fruit	Decoction/ Internal	Heart diseases, Atherosclerosis[73]
				Infusion/ Internal	Heart diseases, Blood-thinner[68,100]
			Seed	Infusion, Decoction/ Internal	Vasodilator[57,67]
			Leaf, Flower	Decoction/ Internal	
***Tripleurospermum elongatum* (Fisch. & C.A.Mey.) Bornm.**	Papatya	Asteraceae	Flower	Infusion, Decoction/ Internal	Cardiovascular diseases[22]
***Tripleurospermum heterolepis* (Freyn & Sint.) Bornm.**	Papatya, Yabani Papatya	Asteraceae	Flower	Tea/ Internal	Heart diseases[36]
***Tripleurospermum monticolum* (Boiss. & A.Huet) Bornm.**	Papatya, Yabani Papatya	Asteraceae	Flower	Tea/ Internal	Heart diseases[36]
***Tripleurospermum sevanense* (Manden.) Pobed.**	Sarı papatya	Asteraceae	Flower	Infusion/ Internal	Heart diseases[44]
***Urtica dioica* L.**	Isırgan Otu, Erkek Çakır, Eşek Çakırı, Deli Çakır, Deli Eşek Isırganı, Alaısırgan, Deve Gicirgeni, Dalagan, Dalıgan, Dalak, Sırgan, Isırgı	Urticaceae	Leaf, Whole plant	Infusion, Decoction/ Internal (Especially in the mornings, on empty stomach)	Atherosclerosis[50]
					Heart diseases[34]
			Aerial part	Infusion/ Internal	Heart diseases[23]
					Atherosclerosis[25,81]
				Decoction/ Internal	Heart diseases[72]
					Blood-purifier[101]
			Leaf	Infusion/ Internal	Blood-thinner[53]
				Decoction/ Internal (Once a day)	Arteriosclerosis[41]
				Infusion/ Internal	Blood and circulation system diseases[82]
			Seed	Decoction/ Internal	Cardiovascular diseases[21]
				Internal (With honey or pekmez)	Blood-purifier[101]

***Verbena officinalis* L.**	Mine çiçeği	Verbenaceae	Aerial part	Decoction/ Internal	Heart diseases[40]
***Viola ermenekensis* Yild. & Dinç**	Menekşe	Violaceae	Flower	Decoction/ Internal (1 or 2 cup)	Heart diseases[81]
***Viola odorata* L.**	Bınevşok	Violaceae	Whole plant	Decoction/ Internal	The pain in the veins[29]
***Viscum album* L.**	Ökseotu, Çakum, Ökse, Yapışkanotu, Burç, Buruç, Armut Burçu, Ahlat Burçu, Ahlat Puruncu, Çam Purucu, Çam Puruncu, Çam Puruşu, Çam Burcu, Güvelek, Puruç, Puruş, Ahlak, Öksü Otu, Göğelek, Gevele, Çekem, Gökçe, Çekem	Viscaceae	Aerial part	Maceration/ Internal	Atherosclerosis[23]
			Whole plant	Decoction/ Internal (A cup per day)	Heart diseases[81]
			Leaf	Infusion (dried)/ Internal	Vasodilator, Heart disaeses[69,93]
			Whole plant	Infusion (dried)/ Internal	Heart diseases, Cardiovascular diseases[60,70]
				Decoction/ Internal	Heart diseases[78]
					Atherosclerosis[48]
			Branch, Leaf	Decoction/ Internal	Atherosclerosis, Heart diseases, Vasodilator[53,67,75]
				Infusion, Maceration/ Internal	Vasodilator[67]
***Viscum album* L. subsp. *abietis* (Wiesb.) Janch.**	Govelek	Viscaceae	Whole plant	Decoction/ Internal	Cardiovascular diseases[60]
***Viscum laxum* Boiss. & Reut. (Syn: *Viscum album* L. subsp. *austriacum* (Wiesb. ex Dichtl) Vollm.)**	Çeküm, Ökseotu, Gökçeotu	Viscaceae	Fruit, Leaf, Seed	Decoction, Infusion, Crushed, Raw/ Internal	Cardiovascular diseases[22]
***Vitex agnus-castus* L.**	Hayıt, Beşparmakağacı	Lamiaceae	Seed	Infusion/ Internal	Atherosclerosis[78]
			Fruit	Infusion/ Internal	Cardiovascular diseases[60]
***Vitis vinifera* L.**	Üzüm, asma, ba, loza, grozde	Vitaceae	Fruit	Raw/ Internal	Blood-forming, Cardiovascular diseases[42]
***Xanthium spinosum* L.**	Gurnık	Asteraceae	Branch	Decoction/ Internal (A cup two times a day	Heart diseases, Embolism[33]
***Ziziphus jujuba* Mill.**	Hünnap, Günnap	Rhamnaceae	Fruit	Raw/ Internal	Heart diseases[23]

RESULTS

As a result of a detailed study of the literature, it was found that, in parallel with the expected incidence of cardiovascular diseases in our society, the use of medicinal plants for their treatment is quite common. One hundred twenty-nine plants from 43 families have been reported as being used to treat the group of diseases, including high blood pressure, cardiac disease, and blood vessels (Table 1). Cardiovascular diseases and/or effects of plants are classified as heart diseases, cardiovascular, atherosclerosis, vasodilator, arteriosclerosis, embolism, heart palpitations, cardialgia, cardiotonic, and blood pressure regulator, as taken precisely from the related ethnobotanical study (Figure 1).

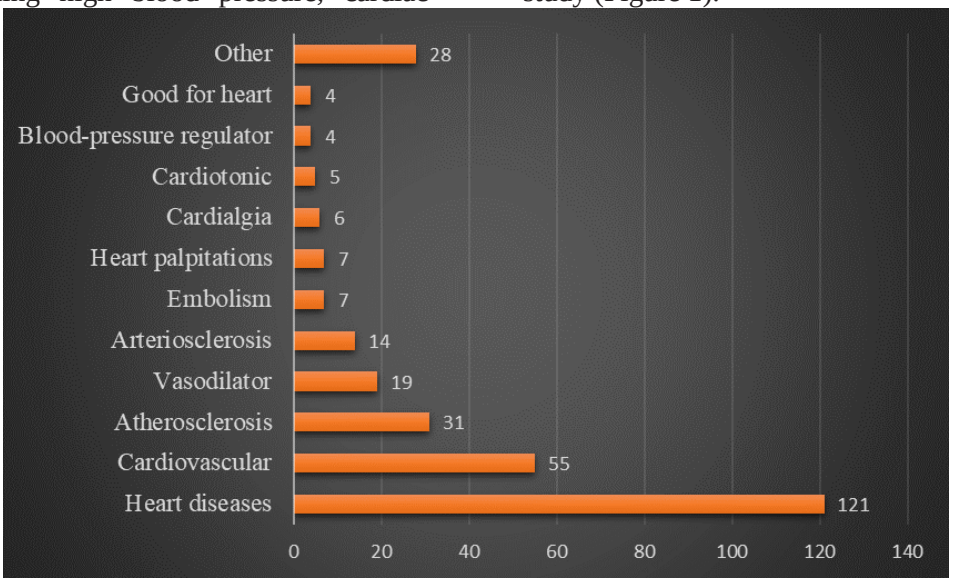

Figure 1. Classification of cardiovascular diseases.

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Over fifty percent of the plants belong to four families: Rosaceae, Lamiaceae, Asteraceae, and Fabaceae. According to the percentage distribution of plants on a family basis, Rosaceae tops the list with 17.8%. In this family, 23 species have been determined to be used against cardiovascular diseases among Turkish people. It is followed by Lamiaceae, with 18 species (14%). The family Asteraceae ranks third with 17 species (13.1%), and Fabaceae follows it with 7 species (5.4%) (Figure 2). *Crataegus monogyna* Jacq., *Lavandula stoechas* L., *Melissa officinalis* L., *Tribulus terrestris* L., *Urtica dioica* L., and *Viscum album* L. are the most frequently cited medicinal plants. When the used parts were analyzed, it was observed that the leaf, aerial parts, fruit, and flower were consumed the most (Figure 3). The consumption is usually in the form of herbal tea prepared as an infusion or decoction (Figure 4).

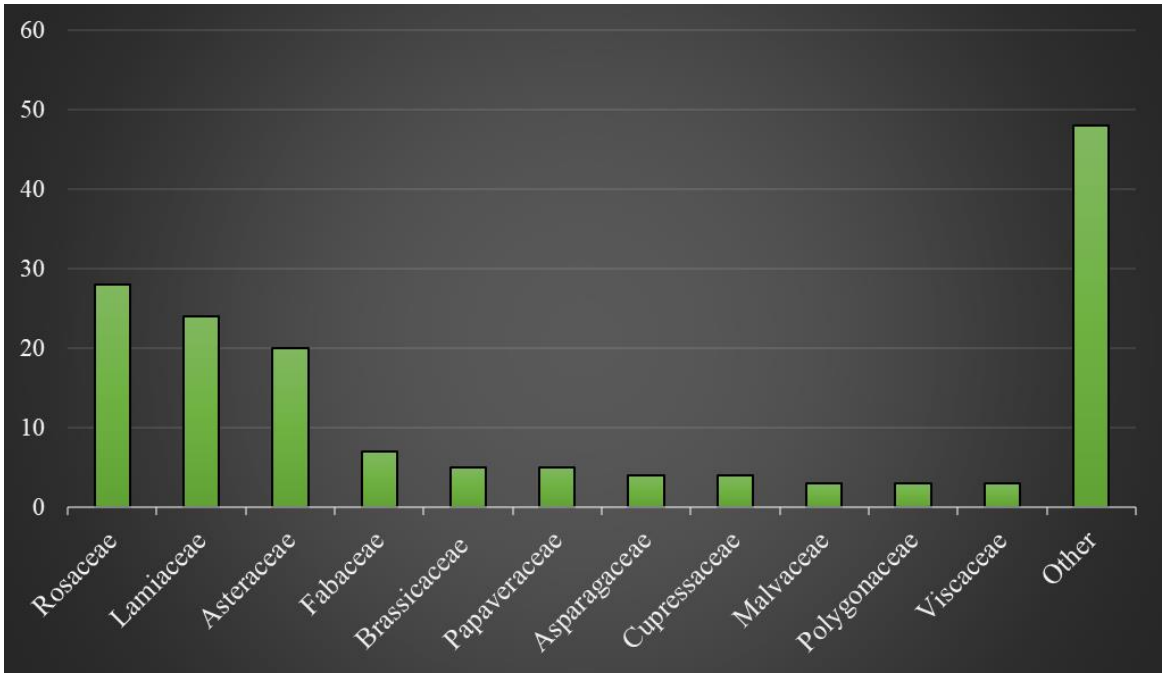

Figure 2. The most cited plant families.

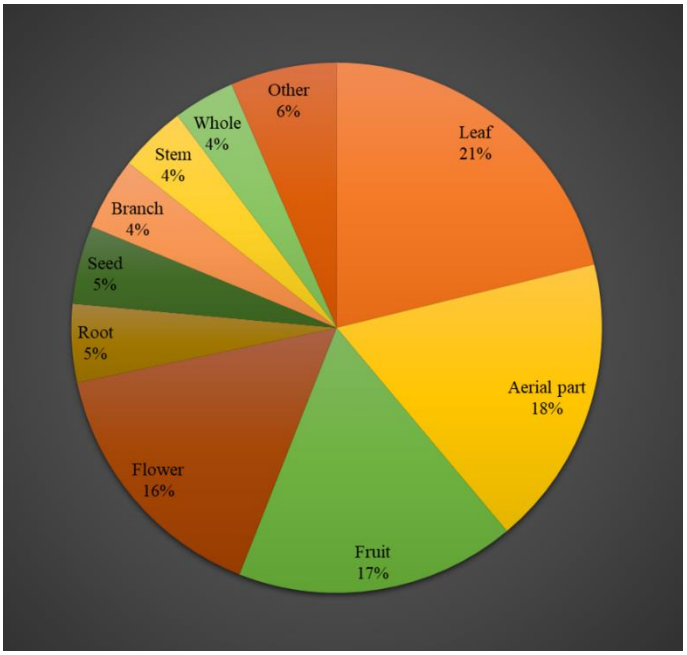

Figure 3. Plant parts used against cardiovascular disease ranked by frequency of use.

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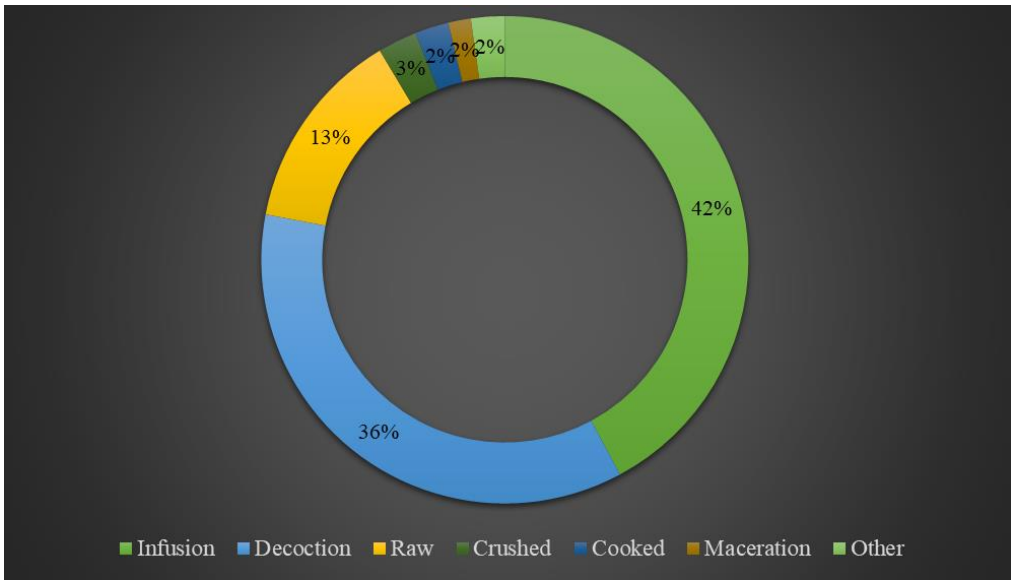

Figure 4. Preparation methods of the plants used against cardiovascular disease ranked by frequency of use.

DISCUSSION

Several medicinal plants have shown experimental cardiovascular activity *in vitro/ in vivo* or clinical studies. We present pharmacological studies that have directly or indirectly evaluated the most cited medicinal plants used to treat cardiovascular diseases.

Crataegus monogyna

The main active compounds found in the flowers, leaves, and fruits of *Crataegus* sp. are sugars and sugar alcohols, phenolic acids, terpenes, essential oils, phenylpropanoids, essentially hydroxycinnamic acids, lignans, and flavonoids. Especially flavonoids (hyperoside, vitexin, etc.) and oligomeric proanthocyanidins are responsible for their protective activity in cardiovascular disease. Numerous studies are directed at the action of *Crataegus monogyna* in preventing atherosclerosis and vascular diseases. It is thought that *Crataegus* sp. increases the ability of cardiomyocytes to transfer calcium via Na+/K+-ATPase.[12] It has been reported that a unique extract of *Crataegus* leaves with flowers induced an endothelium-dependent, NO-mediated vasorelaxation via eNOS phosphorylation at serine 1177. Moreover, fruit extracts of Crataegus reduced the mitochondrial membrane potential by 1.2–4.4 mV.[13]

Lavandula stoechas

Lavandula stoechas contains flavonoids, catechic tannins, sterols, coumarins, leucoanthocyans, and mucilages. The essential oil's major terpenic compounds are fenchone, camphor, and 1,8-cineole. Although various research has proven the pharmacological effects of essential oils and extracts, including antibacterial, antifungal, insecticidal, anti-leishmanial, antioxidant, and anti-inflammatory activities, the cardiovascular activity of *L. stoechas* still needs to be evaluated.[14]

Melissa officinalis

According to ancient sources, Avicenna (980-1037) recommended *Melissa officinalis* to strengthen the heart in the Middle Ages. The plant's bioactive compounds are phenolic compounds, L-ascorbic acid, carotenoids, flavonoids, and terpenoids. In addition to *in vitro* and *in vivo* studies, clinical studies have shown that the plant remarkably affects cardiovascular diseases. In a study investigating the effect of the plant on mild palpitations, leaf extract was given to 28 patients at a dose of 2 × 500 mg/d for 14 days. A decrease in the rate of palpitations by 36.8% was observed.[15] It has also been shown that the aqueous extract is associated with significant electrocardiogram alterations in rats after one week (50, 100, 200 mg/kg) of application. In a double-blind study, 80 people with stable angina were given 3 g of lemon balm herb extract per day or a placebo for three months. According to the study results, a higher nitric oxide concentration, a higher cardiac ejection fraction, a lower lactate dehydrogenase concentration, and reduced systolic and diastolic blood pressure were determined in the study group compared to the control.[16]

Tribulus terrestris

Several chemical studies have identified various compounds in *Tribulus terrestris*, such as saponins,

flavonoids, alkaloids, and other nutrients. The steroidal saponins (terrestrosins A-E, desgalacto-tigonis, etc.), found in high amounts, especially in aerial parts, are responsible for biological activity. In a clinical trial, isolated saponins were given to 406 patients with coronary heart disease. The results indicated that the overall effective remission rate in angina pectoris was 82.3 percent. The total efficacious rate of ECG improvement (52.7%) was higher than that of the control group (35.8%). Researchers have pointed out the positive effects of the plant in the treatment of angina pectoris, owing to the saponins that have the activity of dilating the coronary artery and improving coronary circulation.[17]

Urtica dioica

The chemical constituents of *Urtica dioica* are phytosterols, saponins, flavonoids, tannins, sterols, greasy acids, carotenoids, chlorophylls, proteins, amino acids, and vitamins. The crude aqueous and methanolic extracts of the plant roots were tested on preparations of the aorta with or without prior vasoconstriction of the endothelium. Extracts and the purified fractions possess a vasodilatory activity, and the inotropic activity was recognized in guinea pigs. It was stated that *U. dioica* has a notable antiplatelet action thanks to the flavonoids it contains. Furthermore, the aqueous extract induced strong bradycardia through non-cholinergic and non-adrenergic pathways *in vivo*.[18]

Viscum album

Lectins, viscotoxins, lignans, amines, flavonoids, and polysaccharides are the principal components of the *Viscum album*. Flavonoids and phenolic acids have significant antioxidant activity, which can be beneficial in preventing diseases, including cardiovascular diseases. Research has intensified the antihypertensive activity of different extracts. The aqueous extract exerted an antihypertensive effect on salt-induced hypertension in male rats without alteration in heart rate, possibly involving sympathetic mechanisms. Various extracts of *V. album* stem on arterial blood pressure were performed in Wistar rats. The ethanol extract revealed a significant effect even at the lowest administered concentration (3.33×10^{-5} mg kg^{-1}) and significantly reduced the blood pressure after an administered concentration of 1.00×10^{-3} mg kg^{-1}.[19]

CONCLUSION

It was found that the plants can be used for different purposes in different locations. We determined the six most frequently cited medicinal plants. As there is a lack of scientific validation for *Lavandula stoechas*, further phytochemical and pharmacological studies are recommended to confirm efficacy. Further studies are needed to base the collected information on clinical evidence.

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