

## Plants Used in Anatolian Traditional Medicine for the Treatment of Hemorrhoid

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**Abstract:** Hemorrhoidal disease is a benign perianal disease, which is basically caused by vasodilation on pleux haemorrhoidalis vein, which affects mainly individuals at their active ages, and it is believed that the number of cases is much higher than the actual reported number. The majority of the patients' complaints consist of pain, itching, bleeding and feeling of discomfort. Any patient with these symptoms requires a careful review of their personal history and a physical, digital examination. The treatment options are evaluated in a wide spectrum from conservative to surgical procedures. The main goal of the treatment is, in acute phase, relief of the symptoms quickly and in chronic phase prevention of the relapses. Before going to surgery, depends on the grade of the disease, human being very often apply local topical treatments, plant based intestinal regulators, plant based phlebotonics and anti-inflammatory drugs to improve or prevent the worsening of hemorrhoid. In this review, a brief information was given about hemorrhoid, in further the plants that were applied in traditional medicine, their latin, Turkish and common names, parts of the plants and their method of application in treatment of the symptoms in Anatolia. The data showed that herbal remedies included 170 from 60 different plant families used in the treatment of hemorrhoids. Although there are many natural based antihemorrhoidal preparations presence in the world, just a few safe antihemorrhoidal preparations prescribed in Turkey. This review will be a guide to discovery of different effective natural compounds from plants of different families such as Asteraceae, Lamiaceae and Rosaceae, which are highly rich in terms of antihemorrhoidal compounds flavonoids and terpenes.

**Keywords:** hemorrhoid; natural anti haemorrhoidal; medicinal plants. © 2017 ACG Publications. All rights reserved.

### 1. Introduction

“Hemorrhoid” word is originated from the Greek ‘haema’ (blood) and ‘rhoos’ (flowing) [1]. Haemorrhoids/hemorrhoids, groups of vascular tissues, smooth muscles and connective tissues, which are present in all healthy individuals. They function as cushions, lie along the anal canal mainly in three positions; left lateral, right anterior, and right posterior and various numbers of minor cushions lie between them [2]. For years, it was believed that hemorrhoids were caused by varicose veins in the anal canal, but now that theory is out-of-date, since hemorrhoids and anorectal varices are revealed to be different entities. It has been shown that individual having portal hypertension and varices do not demonstrate an increased prevalence of hemorrhoids [3]. Therefore, the theory of sliding anal canal lining is widely accepted. Consequently, hemorrhoids are accepted as the pathological term to define the disintegration or deterioration of the anal cushions causing venous [2,4].

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Pathological variations occur in anal cushions of the patients such as abnormal venous dilatation, degeneration in the collagen fibers and fibroelastic tissues, distortion of the anal subepithelial muscle, vascular thrombosis, moreover a severe inflammatory reaction including the vascular wall and adjacent connective tissue with related mucosal ulceration, and ischemia might be observed [5]. Hemorrhoids are generally classified as internal, external and mixed (interno-external) based on their location and degree of prolapse [6]. Internal hemorrhoids initiate from the inferior hemorrhoidal venous plexus above the dentate line and are covered by mucosa, external hemorrhoids are dilated venules of this plexus located below the dentate line and are covered with squamous epithelium, while mixed hemorrhoids arise both above and below the dentate line. Internal hemorrhoids, not external, are graded based on their appearance and degree of prolapse, known as Goligher's classification [7].

**Grade I:** The anal cushions bleed, but do not prolapse;

**Grade II:** The anal cushions prolapse through the anus on straining, but reduce spontaneously;

**Grade III:** Like grade II the anal cushions prolapse through the anus on straining or exertion but require manual replacement into the anal canal;

**Grade IV:** The anal cushion prolapse, stays out at all times and is irreducible. Additionally, acutely thrombosed, confined internal hemorrhoids and incarcerated, thrombosed hemorrhoids including circumferential rectal mucosal prolapse are also accepted as grade IV hemorrhoids. The most common expression of hemorrhoids is painless bright red rectal bleeding described by patients. Due to mucous secretion or fecal soiling, prolapsing hemorrhoids might cause anal itching or perineal irritation.

Treatments of Grade I and grade II type hemorrhoids are possible without surgical operation. Not only patients do consent the operation but also they refrain from consulting physician. This case leads to that individuals treat themselves with alternative mostly natural ways. People who suffer from the hemorrhoidal disease prefer to especially plants and their compounds. Although there is a lot of demand for the treatment of the disease both in Turkey and in all over the world the number of effective drugs originated from nature is very low. Plants used to ease the hemorrhoidal symptoms in Anatolia, which are formed in original antihemorrhoidal drug so far will be presented in this review.

## 2. Medical Treatment

The goal of medical treatment is to relieve the symptoms, which ranges from plant based fibers and oral flavonoids (phlebotonics) to topical treatments, band ligation (the surgeon puts a rubber band around the base of the internal hemorrhoid to stop its blood circulation, later the hemorrhoid withers away in a few days); endoscopic (destroying the hemorrhoidal tissue using infrared light, electrical or laser heat or freezing); sclerotherapy (injecting a chemical around the veins to diminish the size of the hemorrhoid) and finally radical surgery (hemorrhoidectomy), depending on degree and severity of symptoms [8]. In this review only the plant based traditional treatment approaches will be given.

A report issued [9] indicating statistical data between 1983 and 1987 and showing that extrapolation of relevance rate of hemorrhoid in Turkey was 3.82%. More recent data suggest that relevance is much higher than this ratio due to the fact that patients are uncomfortable to discuss this issue with their doctors. In Western countries, the incidence of the hemorrhoidal disease has reached to 13-36% of the population [6]. Before age 20, this disease has not been demonstrated. It is most common among adults, ages between 45 and 65 [10]. Patients have expressed that they preferred to use herbals initially before going to doctor is 4.10% due to difficulty in physical exam to heal their hemorrhoidal symptoms [11].

### 2.1. Plant based dietary and lifestyle modification

Fiber supplements are safe and cheap, thus, they remain an integral part of the initial treatment of hemorrhoids. This treatment includes a high level of plant based fiber in the diet, which might help eliminate straining during defecation, since passing hard stool on the anal mucosa may cause harm to the anal cushions and lead to hemorrhoidal disease. Clinical studies have shown that, fiber supplement

reduced the risk of persisting symptoms and bleeding by 50%, when it is applied for up to 6 weeks but did not have effect on prolapse, pain, and itching [12]. Plant based supplements are therefore regarded as an effective treatment in non-prolapsing hemorrhoids [13]. Lifestyle modifications include keeping regular exercises and increasing the intake of dietary fibers and oral fluids and avoiding medication that causes constipation or diarrhea might have major roles to avoid hemorrhoids and/or relieve the symptoms.

## 2.2. Oral flavonoids (Phlebotonics)

Venotonic agents, phlebotonics (diosmin, hesperidin, troxerutin, and hydroxy-ethylrutosides vs.) were first described in the treatment of chronic venous insufficiency and edema. Studies has shown that they increase vascular tone, reduce venous capacity, decrease capillary permeability, and facilitate lymphatic drainage as well as having antiinflammatory effects [14,15,16]. They are effective as an oral medication for acute symptoms of internal Grade I hemorrhoids [17]. Intake of oral flavonoids decrease the risk of recurrence of symptoms at 6 months, therefore, their prescription recommended for short term usage in acute hemorrhoids [17,18]. In Europe and Asia micronized purified flavonoid fraction (MPFF), containing 90 % diosmin and 10 % hesperidin, is the most common preparation used in clinical treatments. A meta-analysis on oral flavonoids for hemorrhoidal treatment, including 14 randomized trials and 1514 patients, suggested that flavonoid intake decreased itching by 35 %, risk of bleeding by 67 %, persistent pain by 65 %, and also reduced the recurrence rate by 47 % [19]. Some reports revealed that following hemorrhoidectomy, MPFF can reduce rectal discomfort, pain and secondary hemorrhage [20].

## 2.3. Topical treatment

A quantity of topical preparations are available without a prescription including creams and suppositories in many countries. These may contain various ingredients such as local anesthesia, corticosteroids, antibiotics, anti-inflammatory drugs and some plant extracts [21]. Topical treatments are easily reachable and practical therefore, they are the most preferred group of medication by the hemorrhoid patients in each grade, moreover may be very effective in relieving symptoms in patients with low-grade hemorrhoids [22].

According to Martindale, international drug list [23], there is a number of plant based antihemorrhoidal preparations in the world besides flavonoids. These preparations have been produced and used externally and internally in different countries include a saponin derivative such as aescin; a coumarin derivative such as esculoside; terpene derivatives such as menthol, carvacrol; and furthermore plant extracts such as butcher's broom, horse chestnut, witch-hazel, yarrow, chamomile (oil), arnica (flower), garlic, peppermint (leaves), oak (bark), red vine (leaves), aloe, madder, marigold, melilot, senna, ginkgo, agrimonia, psyllium (ispaghula), pilewort, pagoda tree, painted nettle, burnet, rhatany, viburnum, caricature-plant, stonebreaker, belladonna, *Curcuma heyneana* Valetton & van Zijp and *Kaempferia angustifolia* Roscoe. Different combinations of plants and compounds are more used in Europe. None of these preparations were produced in Turkey.

Hemorrhoid is called as "basur" or "mayasıl" in Turkish, very common disease in Turkey specifically in the regions of central, eastern and south eastern Anatolia, possible due to the eating habits and lack of regular exercises of this population group. Sensitivity of the patients to a doctor's exam, and limited modern pharmacotherapeutic option available or reachable for the treatment lead to the widespread use of herbal remedies and folk medicine in Turkey. Our goal is to accumulate information about the plants were applied in folk medicine for the treatment of hemorrhoids in Turkey in order to use this information for potential future pharmaceutical products. Data about plants with their family, Latin and Turkish names, used part and application methods applied to treat hemorrhoids were given in the table that were obtained from the ethnobotanical surveys and personal communications [24] (Table 1).

**Table 1.** Plants used in treatment of hemorrhoids in Turkish folk medicine

Familiy	Latin ame	Common Name	Turkish Name	Used Part	Application Method	References
Adoxaceae	<i>Sambucus ebulus</i> L.	Dwarf Elder, Danewort	buzka, sultan otu, yiğden, yılgın, yir otu, bezirgan	Fruit, Leaf	Internal	[25],[26]
	<i>Sambucus nigra</i> L.	European Elder, Elderberry	köpek üzümü, mürver, mülver	Fruit And Seed	External as decoction, lotion or enema, 1-2 times a day, 2-3 weeks	[27]
Altingiaceae	<i>Viburnum lantana</i> L.	Wayfarer	germeşe	Mature Fruit	Internal	[26]
	<i>Liquidambar orientalis</i> Mill.	Oriental sweet gum	günlük	Balsam	External	[28]
Anacardiaceae	<i>Pistacia vera</i> L.	Pistachio	antep fıstığı, şam fıstığı	Gum	External	[29]
	<i>Eryngium billardieri</i> Delar.	Eryngo	boğa diken	Root	Internal	[26]
Apiaceae	<i>Eryngium campestre</i> L. var. <i>virens</i> Link	Eryngo	boğa diken	Root, Stem	Internal	[26]
	<i>Heracleum platytaenium</i> Boiss.	Hogweed	ayıkulağı, ayıgöbeği, tavşan otu, su pıtırağı otu	Leaf And Pedicel	Internal as infusion 1 cup daily for 2-3 days, or external as an enema or lotion	[27]
	<i>Malabaila secacul</i> Banks et Sol.	-	çörtük, çördük	Leaf	Internally eaten 1-2 times a day by dust	[26],[30]
	<i>Opopanax hispidus</i> Friv. Gris.	-	çördük, çörtlük	Leaf	Internally eaten 1-2 times a day by dust	[26],[30]
	<i>Petroselinum crispum</i> Miller	Parsley	maydanoz	Herba	Internal	[26]
	<i>Pimpinella anisum</i> L.	Anise	anason	Fruit	A coffee spoon of ash obtained by burning in the fire a quantity on an empty stomach	[31]
	Araceae	<i>Arum balansanum</i> R.R. Mill.	Arum Lily	yılan bıçağı, el kabartceği	Root And Fruit	Internal
<i>Arum detruncatum</i> C.A. Meyer ex Schott var. <i>detruncatum</i>		Arum Lily	ilhan bıçağı, ilhan burçağı, yılan bıçağı, yılan burçağı, yılan ekmeği, yılan yastığı	Bulb And Tuber	Eaten slicing, Internal	[26],[30],[32]
<i>Arum elongatum steven</i> ssp. <i>Elongatum</i>		Arum Lily	yılan yastığı	Fruit And Tuber	Internal	[26]
<i>Arum</i> L.		Arum Lily	yılan purçuğu	Fruit	Internal	[26],[33],[34]
<i>Dracunculus vulgaris</i> Schott		Snake Lily, Black Dragon	yılan pancarı, yılanbesi, yılan burçağı, yılan	Tuber And Root	Internal as decoction 3-4 times a day, 3 days	[26],[27]

Aristolochiaceae	<i>Aristolochia maurorum</i> L.	Birthwort, Pipevine	bırçağı, yılan burçağı otu, yılan başı, yılan darısı, yılan otu, yılan bıçağı	Root	Internal	[26]
	<i>Achillea aleppica</i> DC. var. <i>zederbaueri</i> (Hayek)Hub.- Mor.	Yarrow	mor yılan çiçeği	Leaf And Flower	External, crushed	[32]
	<i>Achillea millefolium</i> L.	Yarrow	civanperçemi	Capitulum, Herba	External	[28]
	<i>Achillea biebersteinii</i> Afan.	Yarrow	pazvat	Capitulum	Internal	[26]
	<i>Achillea wilhelmsii</i> K.Koch	Yarrow	civanperçemi	Capitulum, Herba	Internal as infusion, External as decoction	[35]
	<i>Anthemis austriaca</i> Jacq.	Chamomile	yavşan	Flower	Internal	[26]
	<i>Anthemis pseudocotula</i> Boiss.	Chamomile	papatya, akbubeç, akbubeçya	Capitulum	Internal as decoction	[26],[30]
	<i>Artemisia austriaca</i> Jacq.	Mugwort	kelemlı	Herba	Internal	[26]
	<i>Bellis perennis</i> L.	Common Daisy	papatya	Capitulum	External as steam bath prepared from the infusion	[26],[30]
	Asteraceae	<i>Carduus pycnocephalus</i> L. ssp. <i>albidus</i> (Bieb.)	Italian Thistle	kazmi eşek dikenı	Flower	Internal, External
<i>Centaurea drabifolia</i> Sm.		Knapweed, Cornflower	basurotu	Leaf, Flower	Internal	[26]
<i>Cichorium intybus</i> L.		Chicory	ham sütlüvan, çatlangaz	Herba, Flower, Root	Internal	[25],[26]
<i>Cirsium arvense</i> (L.) Scop. subsp. <i>vestitum</i> (Wimm. & Grab.) Petr.		Creeping Thistle	çakırdikeni	Root And Scape	Internal as decoction	[35]
<i>Cirsium italicum</i> (Savi) DC.		Thistle	eşek dikenı	Seed	Internal	[26]
<i>Cirsium</i> Mill.		Common Thistle	kilindar	Root	Internal	[26],[36]
<i>Helianthus annuus</i> L.		Sunflower	ayçiçeği	Seed	A handful of roasted, ground, and applied as warm	[31]
<i>Helianthus tuberosus</i> L.		Jerusalem Artichoke	yerelması	Tuber	Eaten or External	[26],[37]
<i>Onopordum bracteatum</i>		Cotton Thistle	kangal	Seed	Internal	[26],[35]

	Boiss. & Heldr. <i>Onopordum turcicum</i> Danin.	Turkish Thistle	kangal dikeneni	Herba, Seed	Internal	[26],[38]
	<i>Picris strigosa</i> Bieb.	-	senameki, acışıro	Root	External as poultice	[35]
	<i>Tripleurospermum oreades</i> (Boiss.) Rech var. <i>oreades</i>	Mayweed	papatya	Herba	Internal	[26]
	<i>Silybum marianum</i> (L.) Gaertn.	Blessed Milkthistle	mübarek dikeneni	Seed	Internal	[28]
Berberidaceae	<i>Berberis crataegina</i> DC.	Barberry	karamık, kızamık dikeneni, ziriç	Fruit And Root	Internal as decoction	[26],[35]
	<i>Berberis integerrima</i> Bunge	Barberry	kızambık	Young Shoots	Internal	[26]
	<i>Bongardia chrysogonum</i> (L.) Spach	Ladies Nightcap	çatlak otu	Tuber	Internal as decoction	[39]
Boraginaceae	<i>Onosma armeniacum</i> Klokov	-	havacıva	Root	---	[26]
	<i>Symphytum officinale</i> L.	Common comfrey	karakafesotu	Root, Leaf	Internal	[28]
Brassicaceae	<i>Lepidium sativum</i> L. ssp. <i>Sativum</i>	Cress	tere otu	Herba	Internal	[26]
Capparaceae	<i>Capparis spinosa</i> L.	Flinders Rose	keber	Fruit	Internal as decoction	[35]
	<i>Dianthus floribundus</i> Boiss.	Pink	basurotu	Whole Plant	Internal	[26]
Caryophyllaceae	<i>Telephium imperati</i> L. subsp. <i>orientale</i> (Boiss.) Nyman	-	mayasıl otu	Herba And Leaf	External as decoction	[35]
Chenopodiaceae	<i>Beta corolliflora</i> Zosimovic ex Butler	Beet	kızılca	Root	Internal as decoction	[26],[35],[36]
	<i>Beta vulgaris</i> L. f. <i>altissima</i> (Döll) Helm.	Beet	şeker pancarı	Tuber	External	[26]
Cistaceae	<i>Cistus</i> L.	Rockrose	kortli, pamuk otu	Leaf	-	[26],[40]
	<i>Bryonia alba</i> L.	White Bryony, Wild Hop	ülüngül	Root	Internal	[26],[38]
Cucurbitaceae	<i>Ecballium elaterium</i> (L.) A. Rich.	Squirting Cucumber	şeytan keleşci cırtatan, acı kelek, acı kavun, yabani kavun, delibostan	Fruit And Root	Internal, External	[26],[37]

	<i>Momordica charantia</i> L.	Bitter Melon	kudretnarı	Fruit	External as oily extract	[26],[28]
	<i>Cupressus sempervirens</i> L.	Mediterranean Cypress	servi	Cone (strobilus)	External	[28]
	<i>Juniperus communis</i> L. ssp. <i>Nana</i>	Common Juniper	ardıç	Fruit	Internal	[26]
Cupressaceae	<i>Juniperus drupacea</i> Lab.	Syrian Juniper	andız katranı, andız pekmezi katran, ardıç katranı	Fruit	Internal	[26]
	<i>Juniperus excelsa</i> Bieb.	Greek Juniper	ardıç	Fruit	External as decoction	[35]
	<i>Juniperus oxycedrus</i> L.	Western Prickly Juniper	dikenli ardıç	Fruit/ Root, Tar, Fruit, Leaf	Internal	[25],[26],[33],[34], [41]
	<i>Juniperus oxycedrus</i> ssp. <i>oxycedrus</i> L.	Cade Juniper	ardıç, diken ardıcı	Leaf Fruit	External as hot decoction steam Red fruits are eaten	[26],[37]
Dioscoraceae	<i>Tamus communis</i> L. subsp. <i>cretica</i> (L.) Kit Tan	Black Bryony	tilki üzümü, yandıran	Root	Internal	[26]
Equisetaceae	<i>Equisetum palustre</i> L.	Marsh Horsetail	kırkkilit otu	Whole Plant	Internal	[26]
	<i>Equisetum telmateia</i> Ehrh.	Giant Horsetail	çam otu	Herba	Internal	[26]
Euphorbiaceae	<i>Euphorbia macroclada</i> Boiss.	Spurge	sütleğen	Latex	External	[26]
	<i>Euphorbia rigida</i> Bieb.	Gopher Spurge	sütleğen	Latex	External	[26]
	<i>Cassia angustifolia</i> Vahl	Alexandrian senna	sinameki	Leaf	Internal	[28]
	<i>Glycyrrhiza glabra</i> L.	Licorice	piyon	Leaf	External	[26]
Fabaceae	<i>Glycyrrhiza glabra</i> L. var. <i>glandulifera</i> Boiss.	Liquorice	payam	Root	Internal as decoction	[26],[37]
	<i>Lotus corniculatus</i> L. subsp. <i>corniculatus</i> (Bieb.) Arc.	Bird's-Foot Trefoil	gazal boynuzu	Herba	Internal as decoction	[35]
	<i>Lupinus</i> L.	Lupin	yahudi baklası	Seed	Some seeds are grinded, sweetened with honey, eaten with a teaspoon in the morning on an empty stomach	[31]

	<i>Trifolium ambiguum</i> Bieb.	Kura Clover	alma otu	Herba	Internal as decoction	[35]
	<i>Vicia ervilia</i> (L.) Willd.	Bitter Vetch	burçak	Seed	Internal	[26]
	<i>Quercus libani</i> Olivier	Lebanon Oak	kara meşe	Fiber, Bark And Leaf	Internal as decoction	[26],[37]
Fagaceae	<i>Quercus pubescens</i> Willd.	Downy Oak	bozmeşe	Leaf, Fiber And Bark	Internal as decoction	[26],[37]
	<i>Quercus trojana</i> P. B. Webb.	Macedonian Oak	kesme ağacı	Root	Internal	[26],[34]
Fumariaceae	<i>Fumaria microcarpa</i> Boiss. ex. F.	Fumitory	şahtere	Herba	Internal	[26]
Gentianaceae	<i>Centaurium erythraea</i> Rafn. ssp.	European Centaury, Centaury	kırmızı kantaron, kibrit otu	Branch with Flower	Internal	[26]
Geraniaceae	<i>Erodium cicutarium</i> (L.) L'Herit. subsp. <i>Cicutarium</i>	Redstem Stork's Bill	potot	Herba	Internal	[26]
Hippocastanaceae	<i>Aesculus hippocastanum</i> L.	Horse Chestnut	atkestanesi	Seed	A few horse chestnut grinded in the muller, a tea spoon swallowed 3 times a day	[31]
Hyacinthaceae	<i>Hyacinthus orientalis</i> L. subsp. <i>chionophilus</i> Wendelbo	Dutch Hyacinth	sümbül	Leaf	External, crushed	[35]
	<i>Hypericum lydiium</i> Boiss.	St. John's-Wort	mayasıl otu, karaman otu	Herba	Internal as decoction	[26],[37]
	<i>Hypericum orientale</i> L.	St. John's-Wort	kırmızı kantaron	Herba	Internal as infusion	[32]
Hypericaceae	<i>Hypericum perforatum</i> L.	St. John's-Wort	sancı otu, sarı kantaron, yakı otu, kantaron, koramanotu	Branch with Flower, Herba	External as mix olive oil with crushed or, internal as decoction (6-12 months)	[26],[32],[37]
	<i>Hypericum scabrum</i> L.	St. John's-Wort	sancı otu, mayasilotu	Herba	Internal as decoction	[26], [35], [37]
Iridaceae	<i>Iris germaniaca</i> L.	Bearded Iris	susam	Underground part	External, Internal	[26]
Juglandaceae	<i>Juglans regia</i> L.	Walnut	ceviz	Leaf	External as steam bath prepared from decoction	[26],[35],[36]
Lamiaceae	<i>Ajuga chamaepitys</i> (L.) Schreb.	Yellow Bugle	basurotu	Herba	Internal	[26]
	<i>Ajuga chamaepitys</i> (L.)	Yellow Bugle	basurotu, mayasilotu	Herba	Internal as decoction	[26],[34],[35]

	Schreber subsp. <i>chia</i> (Schreber) Arcangeli var. <i>chia</i>					
	<i>Ballota acetabulosa</i> (L.) Bentham	Greek Horehound	---	Herba	Internal	[26]
	<i>Mentha longifolia</i> (L.) Hudson	Mint	narpuz	Herba	Internal, eaten	[26],[37]
	<i>Mentha longifolia</i> (L.) Hudson subsp. <i>Longifolia</i>	Mint	yarpuz	Herba	Internal as infusion or decoction, External as decoction or powder	[26],[35]
	<i>Origanum vulgare</i> L. subsp. <i>hirtum</i> (Link) Iestvaart	Oregano	kekik otu	Leaf	Internal	[26]
	<i>Phlomis</i> L. <i>Salvia virgata</i> Jacq.	Lampwick Plant Wand Sage	enişte otu ellik otu, dodil otu	Leaf Herba	External External	[42] [26]
	<i>Sideritis bilgerana</i> P.H.Davis	Mountain Tea	bozşabla, kekikçayı, yaylaçayı	Herba	External as infusion bath	[32]
	<i>Teucrium chamaedrys</i> L. <i>Teucrium chamaedrys</i> L. ssp. <i>chamaedrys</i>	Wall Germander Wall Germander	kısa mahmut,mayasıl otu mayasıl otu, kısamahmut otu, basurotu	Herba Root, Stem	Internal as infusion Internal	[26],[32],[33],[38] [26]
	<i>Teucrium flavum</i> L. subsp. <i>hellenicum</i> Rech. f.	Yellow Germander	mayasıl otu	Herba	Internal	[26]
	<i>Teucrium parviflorum</i> Schreb.	Germander	dağ kekiği	Herba	Internal as decoction	[35]
	<i>Teucrium polium</i> L.	Felty Germander	mayasıl otu, merven,yavşan	Herba	External or, Internal decoction	[25],[26],[35],[41]
	<i>Thymus canoviridis</i> J alas <i>Thymus longicaulis</i> C. Presl subsp. <i>longicaulis</i> var. <i>subisophyllus</i> (Borbas) J alas	Thyme Thyme	kekik otu taş kekiği	Herba Herba	Internal Internal	[26] [26]
Lauraceae	<i>Laurus nobilis</i> L.	Laurel	tehnel	Leaf	External as decoction	[26],[30]

Liliaceae	<i>Allium cepa</i> L.	Onion	Bulb	Bulb	An onions are cooked in ash and crushed with an egg yolk and applied externally	[31]
	<i>Allium porrum</i> L.	Leek	pırasa	Whole Plant	External to anus after boiling in milk	[26],[37]
	<i>Allium sativum</i> L.	Garlic	sarımsak	Bulb	Internal, eaten or, external to anus 1-2 cloves a day	[25],[26],[37]
Loranthaceae	<i>Viscum album</i> L.	Mistletoe	ökse otu	Leaf	Internal	[26]
	<i>Viscum album</i> L. ssp. <i>album</i>	Mistletoe	kuşburnu gökçesi, ökse otu	Herba, Leaf	External as decoction	[26],[35],[38]
Malvaceae	<i>Hibiscus esculentus</i> L.	Okra	bamya	Fruit	Internal as decoction	[26]
	<i>Malva neglecta</i> Wallr.	Mallow	ebegümeçi	Leaf, Herba	Internal	[26]
	<i>Malva sylvestris</i> L.	Mallow	ebegümeçi	Leaf, Herba	Internal	[28]
Moraceae	<i>Ficus carica</i> L.	Common Fig	yemiş, incir	Leaf Lateks	Internal External	[26]
	<i>Ficus carica</i> L. subsp. <i>carica</i>	Fig	incir, yalancı yemiş	Fruit, Leaf	Internal	[25],[26]
Myrtaceae	<i>Myrtus communis</i> L. ssp. <i>communis</i>	Myrtle	murt, mersin	Fruit, Root	Internal	[26],[28],[34]
Nitrariaceae	<i>Peganum harmala</i> L.	Syrian Rue	üzerlik, üzerlikotu	Seed And Root	Internal as eaten-roasted or decoction	[26],[28],[32],[35]
Oleaceae	<i>Olea europea</i> L.	Olive	zeytin	Leaf	Internal	[26],[36]
Papaveraceae	<i>Fumaria officinalis</i> L.	Common Fumitory	şahtere	Herba	Internal	[28]
Pinaceae	<i>Pinus brutia</i> Ten.	Turkish Pine	çam	Resin	External	[26]
	<i>Pinus nigra</i> Arn. ssp. <i>pallasiana</i> (Lamb.) Holmboe	European Black Pine	karaçam	Fruit, Young Shoots	Internal	[26]
Plantaginaceae	<i>Globularia tricosantha</i> Fisch. et Mayer	Globe Daisy	---	Whole Plant	Internal	[26],[40]
	<i>Plantago major</i> L.	Plantain	sinirli yaprak, siyilli yaprak, sümürşük	Seed, Leaf	Internal, as leaf-decoction; seed- crushed and mixed with honey	[25],[26],[37]
	<i>Plantago major</i> L. ssp. <i>major</i>	Broadleaf Plantain	bağa yaprağı	Leaf	Internal	[26],[36]
Platanaceae	<i>Plantago major</i> L. subsp. <i>intermedia</i> (Gilib.) Lange	Broadleaf Plantain, White Man's Foot	bağa yaprağı	Leaf	External or Internal as decoction	[35]
	<i>Platanus orientalis</i> L.	Oriental Plane	çınar pürçüğü	Fruit	Internal	[26]
Poaceae	<i>Agropyron repens</i> (L.) P.	Couch Grass	ayrık	Root	Internal	[26],[34]

	Beauv					
	<i>Zea mays</i> L.	Corn	mısır	Seed And Stylus	Internal as decoction	[26],[37]
	<i>Rheum ribes</i> L.	Syrian Rhubarb	ışgın, uçkun	Shoot And Root	Internal as decoction or crushed	[26],[35],[43]
Polygonaceae	<i>Rumex crispus</i> L.	Curly Dock	evelik	Leaf	External as crushed or Internal as decoction	[26],[35]
	<i>Rumex patientia</i> L.	Patience Dock	at eveliği	Leaf	Internal as infusion	[35]
	<i>Rumex pulcher</i> L.	Fiddle Dock	aküfelik	Seed	Internal	[26]
Punicaceae	<i>Punica granatum</i> L.	Pomegranate	nar	Fruit	Internal	[26],[38]
	<i>Ficaria verna</i>					
Ranunculaceae	Huds.	Lesser Celandine	basurotu, düğün çiçeği	Herba	External	[26]
	<i>Nigella sativa</i> L.	Black cumin	çörekotu	Seed	Internal	[28]
Resedaceae	<i>Reseda lutea</i> L.	Yellow Mignonette	eşek gerdanası	Herba	Internal as infusion	[32]
	<i>Crataegus orientalis</i> Pallas ex Bieb. var. <i>orientalis</i>	Oriental Hawthorn	alıç	Shoot	Internal as decoction	[37]
	<i>Crataegus rhipidophylla</i> Gand.	Hawthorn	alıç	Fruit, Leaf	Internal	[28]
	<i>Cydonia oblonga</i> Miller	Quince	ayva ağacı	Leaf	Internal	[26]
	<i>Laurocerasus officinalis</i> Roem.	Cherry Laurel	taflan	Leaf	Internal	[25],[26]
	<i>Mespilus germanica</i> L.	Medlar	döngel	Bark	Internal	[25],[26]
	<i>Prunus amygdalus</i> Batch var. <i>amara</i> (DC.) Focke	Bitter Almond	acıbadem	Seed	A handful of crushed, External as pomade mixing with olive oil	[31]
Rosaceae	<i>Pyrus elaeagnifolia</i> Pallas ssp. <i>elaagnifolia</i>	Oleaster-Leafed Pear	ahlat armudu	Root	Internal	[26]
	<i>Rosa canina</i> L.	Dog Rose	köpek gülü yabani gül kuşburnu, şilan, karadiken, kuşburnu, itburnu, köpek diken, kür, sıtma gülü	Leaf, Fruit, Root And Tumor On Root	Fruit; Internal as decoction or as mash Tumor; Internal as decoction or powder mixed honey	[25],[26],[30],[35], [36],[37],[43],[44]
	<i>Rosa gallica</i> L.	Gallic Rose	kuşburnu	Root	Internal	[26]
	<i>Rosa pimpinellifolia</i> L.	Burnet Rose	koyungözü	Fruit And Root	Internal as decoction	[26],[35]
	<i>Rosa sempervirens</i> L.	Evergreen Rose	gülüzük, kuşburnu,	Fruit	Internal	[26]

	<i>Rubus armeniacus</i> Focke	Himalayan Blackberry	sıtma gülü köstebek dikenini, karantı, karamuk	Root	Internal	[26]
	<i>Rubus caesius</i> L.	European Dewberry	böğürtlen, karabükten	Root	Internal	[26]
	<i>Rubus canescens</i> DC.	Woolly Blackberry	böğürtlen	Shoot	Internal	[25],[26]
	<i>Rubus canescens</i> DC. var. <i>canescens</i>	Woolly Blackberry	karantı, karamuk	Root	Internal	[26]
	<i>Rubus hirtus</i> Waldst. et. Kit.	Blackberry	avat dikenini	Root	Internal	[26]
Rubiaceae	<i>Rubus sanctus</i> L. Schreb.	Blackberry	böğürtlen	Root	Internal as decoction	[25],[26],[30],[44]
	<i>Galium aparine</i> L.	Cleavers	yoğurtotu	Herba	Internal	[28]
	<i>Verbascum cheiranthifolium</i> Boiss. var. <i>cheiranthifolium</i>	Mullein	sıgırkuyruğu	Leaf And Flower	Internal as decoction before breakfast	[26],[30]
	<i>Verbascum chrysochaete</i> Stapf.	Mullein	sıgırkuyruğu	Flower	Internal as decoction before breakfast	[26],[30]
Scrophulariaceae	<i>Verbascum lasianthum</i> Boiss. Ex. Bentham	Mullein	sıgırkuyruğu	Leaf, Flower, Fruit	Internal as infusion	[26],[30]
	<i>Verbascum pumilum</i> Boiss. and Heldr.	Mullein	sıgırkuyruğu	Whole Plant	External	[26]
	<i>Verbascum symes</i> Murb.et Rech fil.	Mullein	sıgırkuyruğu	Leaf, Flower	External	[26]
	<i>Verbascum thapsus</i> L.	Mullein	sıgırkuyruğu	Leaf	External	[28]
Solanaceae	<i>Datura metel</i> L.	Devil's Trumpet	tatala	Seed	Internal	[26]
	<i>Solanum melongena</i> L.	Eggplant	baldırcan, patlıcan	Fruit, Calix	External	[26]
Styracaceae	<i>Styrax officinalis</i> L.	Official Styrax	tespih ağacı	Root	External as steam bath on boiling water	[26],[30]
Theaceae	<i>Camellia sinensis</i> (L.) Kuntze	Tea	çay	Leaf	External as warm infusion	[31]
Tiliaceae	<i>Tilia rubra</i> DC. ssp. <i>caucasica</i> (Rupr.) V. Engler	Red Lime	ihlamur	Flower	Internal	[26]
Urticaceae	<i>Urtica dioica</i> L.	Nettle	erkekçakır, eşek çakırı, deliçakır, deli eşek ısırganı, alaisırgan, devegicirgeni, ısırgan, cızlağan	Herba (non- flower), Seed And Root	Internal as 1 cup of infusion or decoction 2-3 times a day 1 -5 weeks, or cooked and eaten 2- 3 days; External as enema or mash prepared boiling in milk to anus	[25],[26],[27],[37]

	<i>Urtica pilulifera</i> L.	Roman Nettle	ısrıgan	Herba Root	External Internal	[26]
	<i>Urtica urens</i> L.	Stinging Nettle	ısrıgan	Herba	External, Internal	[26]
Xanthorrhoeaceae	<i>Asphodelus aestivus</i> Brot.	Summer Asphodel	hidrellez kamçısı	Tuber, Root	Internal	[26]
Viscaceae	<i>Arceuthobium oxycedri</i> (DC.) M. Bieb.	Juniper Dwarf Mistletoe	ardıç burcu, andız güveliği	Herba	Internal	[26],[34]
Vitaceae	<i>Vitis vinifera</i> L.	Grape Vine	üzüm, asma, keskin sirke	Fruit, Seed	Internal, eaten directly or External	[26],[37]
Zingiberaceae	<i>Zingiber officinale</i> Rosc.	Ginger	zencefil	Rhizome	Internal	[28]

### 3. Conclusion

In order to collect all the information about the folk medicine were applied to ease and treat hemorrhoids, ethnobotanical studies covering the period of 1984-2015 were gathered and analyzed. The data showed herbal remedies included 170 from 60 different families used in the treatment of hemorrhoids. Records of folk remedies are very common collected from Central Anatolia, East and Southeast Anatolia Regions in Turkey. Most of the plants that were included in folk medicine mainly from Lamiaceae family, which has 43 different species, followed by Rosaceae (42 species) and Asteraceae (23 different plant species) families, respectively. Five folk medicine contained *Rosa canina* L. in different forms. The most preferable plant parts are aerial parts (42) and leaves (42), root (38) and fruits (30), respectively. The way of application was frequently decoction, which is applied orally and topically, probably because of the flavonoid, saponin and volatile compound contents.

Evaluation of Rx Media 2016 (Turkey) data demonstrated us there are 26 pharmaceutical drug preparations related to hemorrhoids, in those drugs out of 71 total active ingredients only 7 substances have biological origins. Those listed natural substances were namely aescin, ruscogenin, hesperidin, menthol, and monoclorcarvacrol [45]. The other biological origins were extracts of *Aesculus hippocastanum* L. and *Hamamelis virginiana* L.. Moreover, in Martindale, mostly diosmin, hesperidin, esculoside, aescin, troxerutin, hesperidin methyl chalcone, rutoside, camphor, tannic acid, menthol and thymol were listed as natural compounds in worldwide drugs are used in hemorrhoids and venous insufficiency. When it is compared with other produced medicines in the world, it seems that industrial production of medication for hemorrhoidal diseases was left orphan, although many people suffer from that.

In this study, our aim was to bring attention for further studies in order to produce oral and topical treatments from plants, which were in limited numbers in our country. This review can be a guide for phytochemical studies and to discovery of novel effective extracts or compounds for the treatment of hemorrhoidal or related diseases. In further studies, extracts can be applied directly in scientific experiments and compared with the isolated major substances for their effect of treatment. Discovery and isolation of new/effective compounds, which are volatile or terpenic compounds such as menthol, carvacrol, camphor or their newly found derivates from Lamiaceae plants; flavonoids such as diosmin, hesperidin, troxerutin or their newly isolated derivatives from Asteraceae and Rosaceae plants; saponin derivates such as aescin, aesculoside or other effective novel compounds from Berberidaceae and Scrophulariaceae plants will provide both a scientific contribution and pharmaceutical preparation for the treatment of hemorrhoidal diseases.

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