



E-ISSN: 2278-4136  
P-ISSN: 2349-8234  
JPP 2016; 5(1): 102-115  
Received: 15-11-2015  
Accepted: 17-12-2015

**Salman Ahmed**

Lecturer, Department of  
Pharmacognosy, Faculty of  
Pharmacy, University of  
Karachi, Karachi-75270,  
Pakistan.

**Muhammad Mohtasheemul  
Hasan**

Associate Professor,  
Department of  
Pharmacognosy, Faculty of  
Pharmacy, University of  
Karachi, Karachi-75270,  
Pakistan.

**Zafar Alam Mahmood**

Colorcon Limited – UK,  
Flagship House, Victory Way,  
Crossways, Dartford, Kent,  
DA26 QD- England.

**Correspondence**

**Muhammad Mohtasheemul  
Hasan**

Associate Professor,  
Department of  
Pharmacognosy, Faculty of  
Pharmacy, University of  
Karachi, Karachi-75270,  
Pakistan.

## Antiuro lithiatic plants in different countries and cultures

**Salman Ahmed, Muhammad Mohtasheemul Hasan, Zafar Alam Mahmood**

### Abstract

Urolithiasis is very old and common urological disorder with its worldwide prevalence, multi-factorial etiology, increased recurrent rate and severe consequences. The adverse effects of currently available antiuro lithiatic agents potentiate the natural product researchers to explore the natural antiuro lithiatic compounds with fewer side effects. The presented communication constitutes a review on antiuro lithiatic effect of four hundred and fifty seven (457) plants belonging to one hundred and eight (108) families found in different parts of the world. This review will provide useful information for the discovery of natural antiuro lithiatic compounds and fill the gaps in knowledge.

**Keywords:** urolithiasis, antiuro lithiatic, natural products, drug development.

### Introduction

Current world-wide interest in traditional medicine has led to rapid development and studies of many remedies employed by various cultures of the world. The side effects of these antiuro lithiatic drugs are given much attention to the application of traditional medicines. Therefore, it is a need to concentrate on all folk natural products useful in urolithiasis for their pharmacological evaluation, isolating single drug entity responsible for antiuro lithiatic effect and developing suitable formulation used against urolithiasis. All provided information was obtained through Google Scholar, Pubmed, Sci Finder, Scirus, Web of Science and a library search. The search terms included Ethno-medicinal survey of anti-uro lithiatic plants, antiuro lithiatic plants, and plants against kidney stones, traditional antiuro lithiatic remedies. It is recorded in alphabetical order of plant scientific name, family, parts used and country name where it is used for the treatment of urolithiasis (table1). Ethnomedicinal surveys from America, Australia, Bangladesh, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, China, Colombia, Cuba, Eastern Albania, Fiji, Germany, Haiti, India, Iran, Italy, Jordan, Kyrgyzstan, Libya, Malaysia, Mauritius, Mexico, Morocco, Nepal, Pakistan, Palestine, Peru, Réunion, Thailand, Turkey, Uzbekistan and Yemen (34 countries) are reported as antiuro lithiatic. In this report we have enumerated 457 medicinal plants of 108 families used as antiuro lithiatic drugs in different countries and cultures.

### Conclusion

The present review not only gives an extensive ethnomedicinal information about the medicinal plants used against urolithiasis in different countries and cultures. But, it also provide an elaborative literature search of traditionally reported antiuro lithiatic plants. In future, it will open a door for the discovery of natural antiuro lithiatic drugs with fewer side effects.

**Table 1:** Medicinal plants used against kidney stones in different countries and cultures

Family	Plants	Part(s)	Country
Acanthaceae	<i>Anisotes trisulcus</i> (Forssk.) Nees.	leaves infusion	Yemen <sup>[1]</sup>
	<i>Barleria prionitis</i> L.	roots decoction	India <sup>[2]</sup>
	<i>Dipteracanthus repens</i> (L.) Hassk.	leaves infusion	Malaysia <sup>[3]</sup>
	<i>Ecbolium viride</i> (Forsk.) Alst.	leaves / roots decoction	India <sup>[2-5]</sup>
	<i>Hygrophila auriculata</i> (Schum.) Heine.	roots decoction	
	<i>Hygrophila schulli</i> (Buch.-Ham.) Almeida.	leaves decoction	
Acoraceae	<i>Acorus calamus</i> L.	roots	Iran <sup>[6]</sup>
Adiantaceae	<i>Adiantum capillus-veneris</i> L.	leaves infusion	Turkey <sup>[7]</sup>
Aizoaceae	<i>Trianthema portulacastrum</i> L.	leaves juice	India <sup>[8]</sup>
			Pakistan <sup>[9]</sup>
Alismataceae	<i>Alisma plantago-aquatica</i> L.	plant decoction	Iran <sup>[6]</sup>
Amaranthaceae	<i>Achyranthes aspera</i> L.	roots decoction / infusion	Bangladesh <sup>[10]</sup>
			India <sup>[11]</sup>
			Pakistan <sup>[12-14]</sup>
	<i>Aerva javanica</i> (Burm. f.) Juss. Ex Shult.	plant	India <sup>[2, 8, 15-18]</sup>
	<i>Aerva lanata</i> (Linn.) Juss. Ex Schult.	leaves juice	
	<i>Amaranthus blitum</i> L.	leaves infusion	
	<i>Amaranthus caudatus</i> L.		
	<i>Amaranthus spinosus</i> L.	roots decoction	
	<i>Amaranthus viridis</i> L.		Pakistan <sup>[19]</sup>
	<i>Beta vulgaris</i> L.	rhizome juice	India <sup>[2, 8, 17, 20, 21]</sup>
<i>Celosia argentea</i> L.	roots infusion		
<i>Gomphrena celosioides</i> Mart.	plant infusion		
Amaryllidaceae	<i>Allium cepa</i> L.	bulb infusion	
	<i>Allium odorum</i> L.	leaves infusion	
	<i>Allium sativum</i> L.	bulb infusion	Palestine <sup>[22]</sup>
	<i>Curculigo orchiooides</i> Gaertn.	rhizome infusion	India <sup>[23]</sup>
	<i>Ungernia victoris</i> Vved.	seeds infusion	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
Anacardiaceae	<i>Pistacia lentiscus</i> L.	plant infusion	Morocco <sup>[25]</sup>
	<i>Rhus succedanea</i> L.	fruit decoction	India <sup>[20, 26]</sup>
	<i>Spondias axillaris</i> L.		
Annonaceae	<i>Malmea depressa</i> (Baill) R.E. Fries.	bark infusion	Mexico <sup>[27]</sup>
Apiaceae	<i>Ammi majus</i> L.	plant infusion	Jordan <sup>[28, 29]</sup>
	<i>Ammi visnaga</i> Lam.	fruit decoction	Palestine <sup>[22]</sup>
	<i>Apium graveolens</i> L.	leaves decoction	Bosnia, Herzegovina <sup>[30]</sup>
			Morocco <sup>[31]</sup>
	<i>Bunium persicum</i> (Boiss.) B. Fedtsch.	fruit decoction	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
			Iran <sup>[6]</sup>
			Turkey <sup>[7]</sup>
	<i>Carum carvi</i> L.	fruit decoction	Iran <sup>[6]</sup>
	<i>Carum copticum</i> L.		Iran <sup>[6]</sup>
	<i>Centella asiatica</i> (Linn.) Urban.	plant decoction	India <sup>[2]</sup>
	<i>Peucedanum grande</i> C.B. Clarke.	fruit decoction	Iran <sup>[6]</sup>
	<i>Coriandrum sativum</i> L.	seeds / leaves decoction	India <sup>[11]</sup>
			Libya <sup>[32]</sup>
			India <sup>[33]</sup>
			Turkey <sup>[7]</sup>
			Iran <sup>[34]</sup>
			Palestine <sup>[35]</sup>
			Iran <sup>[6]</sup>
			Bosnia, Herzegovina <sup>[30]</sup>
			Iran <sup>[6]</sup>
Bosnia, Herzegovina <sup>[30]</sup>			
Turkey <sup>[36]</sup>			
Iran <sup>[6]</sup>			
<i>Petroselinum sativum</i> Hoffm.	leaves decoction / infusion	Palestine <sup>[22, 28, 37]</sup>	
<i>Pimpinella anisum</i> L.	fruit decoction		
Apocynaceae	<i>Carissa opaca</i> Stapf. Ex. Haines.	leaves decoction	Pakistan <sup>[13]</sup>
	<i>Holarrhena antidysenterica</i> (Roth.) DC.	root bark decoction	India <sup>[11, 38]</sup>
	<i>Holarrhena pubescens</i> (Buch.Ham). Wall. Ex. G.	stem / seeds	

	Don.		
Aquifoliaceae	<i>Ilex aquifolium</i> L.	leaves decoction	Eastern Albania <sup>[39]</sup>
Araceae	<i>Arum rupicola</i> var. <i>detruncatum</i> Tzvelev.	leaves infusion	Turkey <sup>[7]</sup>
Araliaceae	<i>Hedera helix</i> L.	aerial parts	Bosnia, Herzegovina <sup>[30]</sup>
Arecaceae	<i>Borassus flabellifer</i> L.	buds infusion	India <sup>[2]</sup>
	<i>Cocos nucifera</i> L.	fruit water	
Asclepiadaceae	<i>Asclepias syriaca</i> L.	roots decoction	America <sup>[40]</sup>
Asparagaceae	<i>Asparagus officinalis</i> L.		Canada <sup>[41]</sup>
	<i>Asparagus racemosus</i> Willd.		Germany <sup>[42]</sup>
Aspleniaceae	<i>Asplenium ceterach</i> L.		India <sup>[33]</sup>
	<i>Asplenium scolopendrium</i> L.	Iran <sup>[6]</sup>	
Asteraceae	<i>Aaronsohnia pubescens</i> K. Bremer & Humph.	leaves infusion	Turkey <sup>[43]</sup>
	<i>Achillea millefolium</i> L.	plant	Iran <sup>[6]</sup>
	<i>Acmella oleracea</i> (L.) R. K. Jansen.		Libya <sup>[32]</sup>
	<i>Ageratum conyzoides</i> L.	roots decoction	Pakistan <sup>[14]</sup>
	<i>Anthemis nobilis</i> Boiss.	flowers decoction / infusion	Australia <sup>[44]</sup>
	<i>Arctium lappa</i> L.	roots decoction	India <sup>[2]</sup>
	<i>Artemisia abrotanum</i> L.	fruit infusion	Iran <sup>[34]</sup>
	<i>Artemisia absinthium</i> L.	plant infusion	India <sup>[26]</sup>
	<i>Artemisia scoparia</i> Waldst. & Kit.		Iran <sup>[6]</sup>
	<i>Artemisia vulgaris</i> L.		Uzbekistan, Kyrgyzstan <sup>[24]</sup>
	<i>Aster tripolium</i> L.	fruit	Iran <sup>[6]</sup>
	<i>Blumea balsamifera</i> (L.) DC.	leaves	Philippine <sup>[45]</sup>
	<i>Calendula officinalis</i> L.	plant	Pakistan <sup>[14]</sup>
	<i>Cichorium intybus</i> L.	leaves raw eaten	America <sup>[40]</sup>
	<i>Cynara scolymus</i> L.		Pakistan <sup>[14]</sup>
	<i>Echinops spinosus</i> L.		Palestine <sup>[35]</sup>
	<i>Enhydra fluctuans</i> Lour.	plant	Iran <sup>[6]</sup>
	<i>Eupatorium birmanicum</i> DC.	leaves decoction	Morocco <sup>[31]</sup>
	<i>Eupatorium purpureum</i> L.	roots tincture	India <sup>[20, 21]</sup>
	<i>Helichrysum arenarium</i> Moench.	flower decoction/ infusion	America <sup>[40]</sup>
	<i>Helichrysum maracandicum</i> Popov.	inflorescence decoction	Turkey <sup>[7, 46]</sup>
	<i>Helichrysum pallasii</i> (Sprengel) Ledeb.	herb infusion	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
	<i>Helichrysum plicatum</i> DC.	aerial parts decoction / infusion	Turkey <sup>[7, 47]</sup>
	<i>Inula oculus-christi</i> L.	flowers decoction	
	<i>Kalimeris indica</i> (L.) Sch.-Bip.	plant decoction	China <sup>[48]</sup>
	<i>Matricaria chamomilla</i> L.	flowers decoction	Iran <sup>[6]</sup>
	<i>Meiogyne minuta</i> (G.Forst.)Less.	plant infusion	Palestine <sup>[22]</sup>
	<i>Onopordum acanthium</i> L.	seeds powder with honey	India <sup>[20]</sup>
	<i>Sonchus oleracea</i> L.	bark infusion	Turkey <sup>[46]</sup>
	<i>Silybum marianum</i> (L.) Gaertner.	shoots decoction	India <sup>[49]</sup>
	<i>Solidago virga-aurea</i> L.	aerial parts	Palestine <sup>[35]</sup>
	<i>Sphaeranthus indicus</i> L.	roots decoction	India <sup>[18, 33]</sup>
	<i>Tanacetum chiliophyllum</i> Schultz.	capitulum decoction	Turkey <sup>[7]</sup>
	<i>Tanacetum parthenium</i> (Linn.) Sch. Bip.	flower with oxymel	Iran <sup>[6]</sup>
	<i>Taraxacum officinale</i> F.H. Wigg.	roots decoction	America <sup>[40]</sup>
	<i>Trapogon buhthalmoides</i> (DC.) Boiss.	leaves raw eaten	Turkey <sup>[7, 46]</sup>
	<i>Taraxacum androssovii</i> Schischkin.	leaves infusion	
	<i>Taraxacum fedtschenkoi</i> Hand.-Mazz.		
	<i>Taraxacum macrolepium</i> Schischkin.		
	<i>Tridax procumbens</i> L.		
<i>Xanthium strumarium</i> L.	roots decoction / infusion	India <sup>[20, 50]</sup>	
Averrhoaceae	<i>Averrhoa carambola</i> L.	fruit	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
Berberidaceae	<i>Berberis integerrima</i> Bunge.	leaves decoction	Iran <sup>[21]</sup>
Betulaceae	<i>Betula lenta</i> L.		America <sup>[40]</sup>
	<i>Betula pendula</i> Roth.	leaves / bark infusion	Bosnia, Herzegovina <sup>[30]</sup>
Bombacaceae	<i>Betula utilis</i> D. Don.	leaves infusion	India <sup>[33, 38]</sup>
	<i>Bombax ceiba</i> L.	bark / fruit	

Boraginaceae	<i>Arnebia euchroma</i> L.	roots	Iran <sup>[6]</sup>
	<i>Cordia ecalyculata</i> Vell.	fruit roasted and brewed	Brazil <sup>[27]</sup>
	<i>Cordia grandis</i> Roxb.	fruit	India <sup>[20]</sup>
	<i>Heliotropium indicum</i> L.	leaves decoction	Cuba <sup>[27]</sup>
	<i>Heliotropium strigosum</i> Willd.	leaves infusion	Pakistan <sup>[9]</sup>
	<i>Lithospermum officinale</i> L.	fruit decoction	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
	<i>Rotula aquatica</i> Lour.	roots / stem decoction	India <sup>[2]</sup> Pakistan <sup>[14]</sup>
	<i>Tournefortia acuminata</i> DC.	leaves infusion	Réunion <sup>[51]</sup>
Brassicaceae	<i>Armoracia lapathifolia</i> Glib.	roots / seeds	Palestine <sup>[22, 37]</sup>
	<i>Barbarea vulgaris</i> R.Br.	leaves infusion	
	<i>Brassica napus</i> L.	leaves juice	
	<i>Brassica oleracea</i> L.	fruit ash	Iran <sup>[6]</sup>
	<i>Capsella bursa-pastoris</i> (L.) Medik.	herb decoction / infusion	America <sup>[40]</sup> Palestine <sup>[22]</sup>
	<i>Cardamine uliginosa</i> M. Bieb.	aerial parts decoction / infusion	Turkey <sup>[7]</sup>
	<i>Raphanus sativus</i> L.	leaves / roots juice and seeds powder	India <sup>[38]</sup>
		roots infusion	Pakistan <sup>[52]</sup>
		fruit	Iran <sup>[6]</sup>
	<i>Zilla spinosa</i> (L.) Prantl.	aerial parts decoction	Morocco <sup>[31]</sup>
Bromeliaceae	<i>Ananas comosus</i> (Linn.) Merr.	fruit juice	India <sup>[2]</sup>
Burseraceae	<i>Commiphora mukul</i> Engl.	gum	Iran <sup>[6]</sup>
Caesalpiniaceae	<i>Bauhinia forficata</i> Link.	leaves decoction	Brazil <sup>[27]</sup>
	<i>Bauhinia purpurea</i> L.	bark infusion	Nepal <sup>[53]</sup>
	<i>Cassia auriculata</i> L.	leaves juice	India <sup>[11, 17]</sup> Mauritius <sup>[51]</sup>
	<i>Cassia fistula</i> L.	fruit juice	
	<i>Cassia occidentalis</i> L.	flowers	India <sup>[2, 20, 54]</sup>
	<i>Saraca asoca</i> (Roxb.) De Wilde.	bark /seeds decoction	
	<i>Tamarindus indica</i> L.	leaves decoction	
Cannabaceae	<i>Cannabis sativa</i> L.	fruit	Iran <sup>[6]</sup>
Capparidaceae	<i>Crateva adansonii</i> DC. Subsp. <i>odora</i> Buch. Ham.	bark decoction	India <sup>[11, 33, 38, 55]</sup>
	<i>Crataeva magna</i> (Lour.) D.C.	stem bark decoction	
	<i>Crataeva nurvala</i> Buch.-Ham.		
Caricaceae	<i>Carica papaya</i> L.	roots paste	
Caryophyllaceae	<i>Gymnocarpus decandrus</i> Forssk.	aerial parts	Morocco <sup>[31]</sup>
	<i>Gypsophila struthium</i> L.	roots	Iran <sup>[6]</sup>
	<i>Paronychia argentea</i> Lam.	leaves / flowers decoction	Palestine <sup>[37]</sup>
	<i>Saponaria mesogitana</i> Boiss.	leaves / roots decoction	
Celastraceae	<i>Celastrus paniculatus</i> Willd.	leaves infusion	India <sup>[38]</sup>
Chenopodiaceae	<i>Chenopodium album</i> L.	plant infusion	Pakistan <sup>[14, 56]</sup>
	<i>Haloxylon stocksii</i> Boiss. Benth. & Hook.	-----	
	<i>Suaeda fruticosa</i> L. Forsk.	leaves infusion	
Combretaceae	<i>Terminalia arjuna</i> (Roxb.) Wt.& Arn.	bark infusion	India <sup>[2, 17, 20, 38, 57]</sup>
Campanulaceae	<i>Pratia nummularia</i> Benth. ex Kurz.	plant decoction	
Convolvulaceae	<i>Argyrea nervosa</i> (Burm.f.) Bojer.	leaves infusion	
	<i>Xenostegia tridentata</i> (L.) D.F. Austin & Staples.	roots decoction	
Costaceae	<i>Costus speciosus</i> (Koen.) Sm.	tubers decoction	
	<i>Costus spicatus</i> (Jacq.) Sw.	plant infusion	
Crassulaceae	<i>Bryophyllum pinnatum</i> (Lam.) Oken.	leaves juice	Brazil <sup>[27]</sup> India <sup>[8]</sup> Pakistan <sup>[9]</sup>
	<i>Bryophyllum calycinum</i> Salisb.		India <sup>[11]</sup>
	<i>Kalanchoe pinnata</i> (Lam.) Pers.		Bangladesh <sup>[58]</sup> India <sup>[38, 59]</sup>
Cucurbitaceae	<i>Benincasa hispida</i> (Thunb.) Cogn.	fruit juice	Pakistan <sup>[60]</sup>
	<i>Bryonia alba</i> L.	stem infusion	Iran <sup>[6]</sup>
	<i>Citrullus colocynthis</i> (L.) Schrad.	-----	Pakistan <sup>[14, 52]</sup>
	<i>Citrullus lanatus</i> L.	seeds infusion	
	<i>Citrullus vulgaris</i> Schrad.	fruit / seed infusion	Jordan <sup>[28]</sup> Pakistan <sup>[14]</sup>
	<i>Coccinia grandis</i> (L.) Voigt.	roots decoction	India <sup>[16]</sup>
	<i>Cucumis melo</i> L.	seeds / fruit juice	Pakistan <sup>[52]</sup> India <sup>[2]</sup>

	<i>Cucumis sativus</i> L.	seeds / fruit decoction	Iran <sup>[6]</sup>	
			India <sup>[61]</sup>	
			Pakistan <sup>[14]</sup>	
			leaves / roots decoction	Palestine <sup>[22]</sup>
				Fiji <sup>[62]</sup>
		<i>Lagenaria siceraria</i> (Molina) Standl.	fruit infusion	India <sup>[2, 59, 61, 63]</sup>
		<i>Momordica dioica</i> Roxb. ex Willd.	seeds	
	<i>Momordica cochinchinensis</i> (Lour.) Spreng.	fruit / seeds infusion		
	<i>Mukia maderaspatana</i> (Linn.) M. Roem.	plant infusion		
Cupressaceae	<i>Juniperus chinensis</i> L.	fruit infusion	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Juniperus communis</i> L.			
	<i>Juniperus excelsa</i> M. Bieb.			
	<i>Juniperus oxycedrus</i> L. subsp. <i>oxycedrus</i>	cone	Turkey <sup>[64]</sup>	
	<i>Juniperus sabina</i> L.	roots decoction	Uzbekistan, Kyrgyzstan <sup>[24]</sup>	
	<i>Juniperus seravschanica</i> Kom.			
	<i>Juniperus pseudosabina</i> Fisch.	fruit		
Cyperaceae	<i>Cyperus longus</i> L.	aerial parts decoction	Turkey <sup>[65]</sup>	
	<i>Cyperus rotundus</i> L.	rhizome	Iran <sup>[6]</sup>	
Ebenaceae	<i>Diospyros ebenum</i> J. Koenig.	wood		
Ericaceae	<i>Arctostaphylos pungens</i> Kunth.	leaves decoction	India <sup>[66]</sup>	
	<i>Chimaphila maculata</i> (L.) Pursh.		America <sup>[40, 67]</sup>	
	<i>Chimaphila umbellata</i> (L.) Barton.	aerial parts decoction	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Vaccinium vitis-idaea</i> L.			
Equisetaceae	<i>Equisetum arvensis</i> L.	aerial parts juice	Pakistan <sup>[68]</sup>	
	<i>Equisetum bogotense</i> HBK.	plant infusion	Turkey <sup>[36]</sup>	
	<i>Equisetum telmateia</i> Ehrh.	aerial parts infusion	Peru <sup>[69]</sup>	
	<i>Equisetum debile</i> Roxb.	plant juice	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Equisetum ramosissimum</i> Desf.	aerial parts decoction / infusion	India <sup>[8]</sup>	
Euphorbiaceae	<i>Acalypha indica</i> L.	leaves / flower	Turkey <sup>[43, 64]</sup>	
	<i>Emblica officinalis</i> Gaertn.	fruit pulp / infusion	Pakistan <sup>[70]</sup>	
	<i>Euphorbia hirta</i> L.	plant decoction	India <sup>[11, 21, 71]</sup>	
	<i>Euphorbia nerifolia</i> L.			
	<i>Euphorbia prostrata</i> L.		Pakistan <sup>[68, 70]</sup>	
	<i>Euphorbia retusa</i> Forssk.	latex decoction	Morocco <sup>[31]</sup>	
	<i>Euphorbia serpens</i> Kunth.	plant decoction	Pakistan <sup>[70]</sup>	
	<i>Homonoia riparia</i> Lour.	root decoction	India <sup>[2, 20, 72]</sup>	
	<i>Macaranga peltata</i> Roxb. Muell.-Arg.	bark decoction		
	<i>Mallotus philippensis</i> (Lam.) Muell. Arg.			
	<i>Phyllanthus amarus</i> Schumach. & Thonn.			
	<i>Phyllanthus fraternus</i> Webster.	plant decoction	Pakistan <sup>[70]</sup>	
	<i>Phyllanthus urinaria</i> L.			
		<i>Ricinus communis</i> L.	roots decoction	India <sup>[8]</sup>
	<i>Sapium sebiferum</i> (Linn.) Roxb.	leaves infusion	Pakistan <sup>[70]</sup>	
Fabaceae	<i>Abrus precatorius</i> L.	leaves juice	India <sup>[11]</sup>	
	<i>Acacia Jacquemontii</i> Benth.	leaves infusion	Pakistan <sup>[14]</sup>	
	<i>Alhagi maurorum</i> Medik.	roots decoction	Palestine <sup>[37]</sup>	
			Jordan <sup>[28]</sup>	
	<i>Butea monosperma</i> (Lam.) Taub.	leaves decoction; stem bark paste; seeds powder	India <sup>[11, 38]</sup>	
	<i>Acacia tortilis</i> (Forssk.) Hayne subsp. <i>raddiana</i> (Savi) Brenan.	fruit decoction	Morocco <sup>[31]</sup>	
	<i>Astragalus hamosus</i> L.		Iran <sup>[73]</sup>	
	<i>Cassia italica</i> (Mill.) Spreng. / <i>Senna italica</i>	plant	Pakistan <sup>[14]</sup>	
	<i>Caesalpinia pulcherrima</i> (L.) Sw.	leaves decoction	Peru <sup>[27]</sup>	
	<i>Cicer arietinum</i> L.	fruit infusion	Iran <sup>[6]</sup>	
	<i>Clitoria ternatea</i> L.	root bark decoction	India <sup>[2, 11, 74]</sup>	
	<i>Crotalaria burhia</i> Buch.-Ham.	leaves juice		
	<i>Glycyrrhiza glabra</i> L.	roots decoction		Turkey <sup>[7]</sup>
	<i>Indigofera tinctoria</i> L.		India <sup>[2]</sup>	
	<i>Lupinus albus</i> L.	seeds infusion	Jordan <sup>[28]</sup>	
			India <sup>[55]</sup>	
	<i>Macrotyloma uniflorum</i> (Lam.) Verdc. (formerly as <i>Dolichos biflorus</i> L.)		Iran <sup>[13]</sup>	
			Nepal <sup>[53]</sup>	
			Pakistan <sup>[14]</sup>	
<i>Medicago sativa</i> L.	roots decoction		Iran <sup>[6]</sup>	

	<i>Melilotus officinalis</i> (L.) Pall.	aerial parts decoction	Turkey <sup>[47]</sup>	
	<i>Ononis spinosa</i> L. subsp. <i>leiosperma</i> (Boiss.) Sirj.	roots decoction /infusion	Bulgaria <sup>[75]</sup>	
	<i>Phaseolus vulgaris</i> L.	seeds decoction /infusion	Turkey <sup>[7, 47]</sup>	
	<i>Prosopis farcta</i> (Sol. Ex Russell) J.F. Macbr.	foliage decoction	Haiti <sup>[27]</sup>	
	<i>Tephrosia purpurea</i> (L.) Pers.	leaves decoction and root juice	Palestine <sup>[37]</sup>	
	<i>Trigonella foenum graecum</i> L.	seeds infusion	India <sup>[38]</sup>	
Fagaceae	<i>Quercus cerris</i> L.	aerial parts infusion	Iran <sup>[1]</sup>	
	<i>Quercus petraea</i> (Mattuschka) Liebl.			
	<i>Quercus pubescens</i> Willd.			
	<i>Quercus robur</i> L.			
Gentianaceae	<i>Enicostema axillare</i> (Lam.) A. Raynal.	leaves infusion	Bosnia, Herzegovina <sup>[30]</sup>	
Gesneriaceae	<i>Coralloidiscus lanuginosus</i> (Wall. ex DC.) B.L. Burt.	plant decoction		
	<i>Didymocarpus pedicellata</i> R.Br.			
Hyacinthaceae	<i>Didymocarpus tomentosa</i> Wight.	bulb	Iran <sup>[6]</sup>	
	<i>Scilla indica</i> Roxb.	herb decoction	Turkey <sup>[7]</sup>	
Hypericaceae	<i>Hypericum montbretii</i> Spach.	aerial parts infusion	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Hypericum montanum</i> L.			
	<i>Hypericum perforatum</i> L.			
	<i>Hypericum tetrapterum</i> Fr.			
Hydrangeaceae	<i>Hydrangea arborescens</i> L.	roots decoction	America <sup>[40]</sup>	
Illecebraceae	<i>Paronychia argentea</i> Lam.	aerial parts decoction	Jordan <sup>[28, 29]</sup>	
Lamiaceae	<i>Ajuga chamaepitys</i> Schrb.	plant decoction	Iran <sup>[6]</sup>	
	<i>Coleus amboinicus</i> (Lour.) Spreng.	leaves juice	India <sup>[11, 33]</sup>	
	<i>Glechoma hederacea</i> L.	leaves decoction	America <sup>[40]</sup>	
	<i>Lavandula stoechas</i> L.		Palestine <sup>[35]</sup>	
	<i>Mentha pulegium</i> L.	plant decoction	Turkey <sup>[43]</sup>	
	<i>Mentha spicata</i> L.	leaves infusion	Iran <sup>[6]</sup>	
	<i>Micromeria biflora</i> (Buch.-Ham. ex D. Don) Benth.	plant decoction	India <sup>[38]</sup>	
	<i>Orthosiphon aristatus</i> (Blume) Miq.	plant decoction	Pakistan <sup>[14]</sup>	
	<i>Ocimum basilicum</i> L.	aerial parts	India <sup>[77]</sup>	
	<i>Ocimum sanctum</i> L.	plant decoction	Iran <sup>[6]</sup>	
	<i>Ocimum tenuiflorum</i> L.	roots decoction	India <sup>[2, 11]</sup>	
	<i>Origanum majorana</i> L.	leaves juice	Palestine <sup>[35]</sup>	
	<i>Orthosiphon grandiflorus</i> Bondingh.	plant decoction	India <sup>[2, 66]</sup>	
	<i>Orthosiphon stamineus</i> Benth.			
	<i>Plectranthus amboinicus</i> (Lour.) Spreng.	leaves infusion	Jordan <sup>[28]</sup>	
	<i>Rosmarinus officinalis</i> L.	leaves / stem decoction	Iran <sup>[6]</sup>	
	<i>Tectona grandis</i> L.	root / seeds decoction	India <sup>[2]</sup>	
	<i>Teucrium chamaedrys</i> L.	herb decoction	Turkey <sup>[46, 78]</sup>	
	<i>Teucrium polium</i> L.			
	<i>Teucrium scordium</i> L.	plant decoction	Iran <sup>[6]</sup>	
	<i>Thymus kotschyanus</i> Boiss. ET Hoh.	leaves infusion	Iran <sup>[79]</sup>	
	<i>Thymbra spicata</i> L. var. <i>spicata</i>	leaves decoction	Turkey <sup>[7, 78]</sup>	
	<i>Thymus migricus</i> Klokov & Des.-Shost.	leaves decoction	Jordan <sup>[28, 29]</sup>	
	<i>Teucrium polium</i> L.	aerial parts infusion	Iran <sup>[6, 34]</sup>	
	<i>Vitex agnus-castus</i> L.	fruit	India <sup>[20]</sup>	
	Lauraceae	<i>Actinodaphne angustifolia</i> (Blume) Nees.	plant decoction	Iran <sup>[6]</sup>
		<i>Cinnamomum aromaticum</i> Nees.	bark infusion	India <sup>[2, 20, 21]</sup>
<i>Cinnamomum bejolghota</i> (Buch-Ham) Sweet.				
<i>Cinnamomum tamala</i> L.		leaves infusion		
<i>Cinnamomum verum</i> J. Presl. Prir.		leaves decoction	Turkey <sup>[65]</sup>	
<i>Mentha arvensis</i> L.				
<i>Persea gratissima</i> Gaertn. fil.		bark infusion	Iran <sup>[6]</sup>	
<i>Laurus nobilis</i> L.	plant decoction	India <sup>[5, 11]</sup>		
Lemnaceae	<i>Lemanea fluviatilis</i> L.	roots decoction	Pakistan <sup>[9]</sup>	
Liliaceae	<i>Asparagus racemosus</i> (Willd.) Oberm.	leaves decoction	India <sup>[38]</sup>	
	<i>Asphodelus tenuifolius</i> Cav.	bulb infusion	Palestine <sup>[37]</sup>	
	<i>Drimia indica</i> (Roxb.) Jessop. (formerly known as <i>Urginea indica</i> )	leaves / stem decoction	Turkey <sup>[64]</sup>	
	<i>Ruscus aculeatus</i> L.	fruit		
	<i>Ruscus hypoglossum</i> L.			

	<i>Smilax aspera</i> L.	roots / leaves infusion	Palestine <sup>[35]</sup>
	<i>Smilax lanceifolia</i> Roxb.	rhizome decoction	
Linderniaceae	<i>Lindernia ruellioides</i> (Colsm.) Pennell.	plant decoction	
Loganiaceae	<i>Strychnos potatorum</i> L.	seed decoction	India <sup>[2, 5, 18, 21]</sup>
Loranthaceae	<i>Dendrophthoe falcata</i> (L.f.) Etting.	plant decoction	
Lythraceae	<i>Lawsonia inermis</i> L.	bark decoction	Libya <sup>[32]</sup>
	<i>Lawsonia inermis</i> L.	roots	Iran <sup>[6]</sup>
	<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne.	aerial parts juice	
Malvaceae	<i>Abrus precatorius</i> L.	leaves infusion	India <sup>[2, 8, 50]</sup>
	<i>Abutilon indicum</i> (L.) Sweet.	leaves juice	
	<i>Alcea apterocarpa</i> (Fenzl) Boiss.	roots / shoots decoction	Turkey <sup>[7]</sup>
	<i>Althaea officinalis</i> L.	herb infusion	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
		roots / fruit	Iran <sup>[6]</sup>
	<i>Alcea calvertii</i> (Boiss.) Boiss.	herb decoction	
	<i>Alceafasciculiflora</i> Zohary.	roots decoction	
	<i>Alcea flavovirens</i> (Boiss. & Buhse) Iljin.	plant decoction	Turkey <sup>[7, 43]</sup>
	<i>Alcea pallida</i> (Waldst. & Kit. Ex Willd.) Waldst. & Kit.	seeds / flowers decoction	
	<i>Hibiscus sabdariffa</i> L.	leaves decoction	India <sup>[20]</sup>
	<i>Malvella sherardiana</i> (L.) Jaub. & Spach.	plant	Turkey <sup>[65]</sup>
	<i>Sida rhombifolia</i> L.	roots decoction	India <sup>[2]</sup>
Menispermaceae	<i>Chondrodendron tomentosum</i> Ruiz & Pavón.	roots decoction	Brazil, Peru <sup>[27]</sup>
	<i>Cissampelos pareira</i> L.	roots infusion	America <sup>[80]</sup>
	<i>Cyclea peltata</i> (Lam.) Hook. f. & Thomson	leaves juice	
	<i>Tinospora cordifolia</i> (Willd. L.) Miers.	leaves and stem juice	India <sup>[11, 18, 38, 81]</sup>
Mimosaceae	<i>Mimosa pudica</i> L.	leaves juice and roots decoction	
Moraceae	<i>Ficus carica</i> L.	leaves decoction	Palestine <sup>[37]</sup>
		fruit	Jordan <sup>[28]</sup>
		fruit	Pakistan <sup>[14]</sup>
	<i>Ficus palmata</i> Forsk.	fruit	Palestine <sup>[22]</sup>
			Pakistan <sup>[82]</sup>
Moringaceae	<i>Moringa pterygosperma</i> Gaertn.	root bark juice	
Musaceae	<i>Ensete superbum</i> (Roxb.) Cheesman.	roots juice and seeds powder	
	<i>Musa paradisiaca</i> L.	stem/ flowers juice	India <sup>[2, 8, 83]</sup>
	<i>Musa balbisiana</i> Colla.	roots / leaves decoction	
		roots decoction	
Myrtaceae	<i>Leptospermum amboinense</i> Reinw. ex Blume.	aerial parts	Australia <sup>[84]</sup>
	<i>Leptospermum scoparium</i> J. R. Forst. & G. Forst.		
	<i>Myrtus communis</i> L.	seeds decoction	Turkey <sup>[43]</sup>
	<i>Syzygium aromaticum</i> (L.) Merr. & Perry.	inflorescence powder	India <sup>[21]</sup>
Nyctaginaceae	<i>Boerhavia diffusa</i> L.	roots decoction	Brazil <sup>[27]</sup>
		roots decoction	India <sup>[17]</sup>
		roots decoction	Italy <sup>[85]</sup>
Oleaceae	<i>Olea europaea</i> L.	leaves / fruit decoction	Jordan <sup>[28, 29]</sup>
	<i>Phillyrea latifolia</i> L.	fruit	Palestine <sup>[22]</sup>
		fruit	Turkey <sup>[64]</sup>
Onagraceae	<i>Ludwigia perennis</i> L.	plant decoction	India <sup>[2]</sup>
Orchidaceae	<i>Dactylorhiza umbrosa</i> (Kar. & Kir.) Nevski.	tuber decoction	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
Oxalidaceae	<i>Biophytum sensitivum</i> (L.) DC.	roots decoction	
	<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch.	roots decoction	India <sup>[2, 20, 38]</sup>
	<i>Oxalis corniculata</i> L.	leaves decoction	
Paeoniaceae	<i>Paeonia officinalis</i> L.	fruit	Iran <sup>[6]</sup>
Papilionaceae	<i>Crotalaria albida</i> Heyne ex Roth.	roots decoction	Thailand <sup>[86]</sup>
	<i>Crotalaria pallida</i> Ait.		
	<i>Crotalaria sessiliflora</i> L.		
	<i>Desmodium microphyllum</i> (Thunb.) DC.	plant decoction	India <sup>[20]</sup>
	<i>Lupinus varius</i> Gaertn.	seeds	Palestine <sup>[37]</sup>
Periplocaceae	<i>Hemidesmus indicus</i> (L.) R.Br.	leaves / roots decoction	
Phyllanthaceae	<i>Phyllanthus emblica</i> L.	fruit juice	India <sup>[2, 38, 87]</sup>
	<i>Phyllanthus fraternus</i> Webster.	plant infusion	
	<i>Phyllanthus lanceolatus</i> Poir.	leaves / stem bark decoction	Mauritius <sup>[51]</sup>
	<i>Phyllanthus niruri</i> L.	plant decoction	Brazil <sup>[27]</sup>
			India <sup>[2, 88]</sup>

Pinaceae	<i>Cedrus deodara</i> (Roxb. ex D. Don) G. Don.	wood / latex	Iran <sup>[6]</sup>	
			Nepal <sup>[89]</sup>	
	<i>Picea mariana</i> (Mill.) Britton, Sterns & Poggenburg.	bark decoction	America <sup>[42]</sup>	
	<i>Picea smithiana</i> (Wall.) Boiss.	leaves decoction	Pakistan <sup>[90]</sup>	
Piperaceae	<i>Pinus eldarica</i> Medw.	fruit	Iran <sup>[6]</sup>	
	<i>Peperomia pellucida</i> (Linn.) Kunth.	leaves decoction / infusion	India <sup>[2]</sup>	
	<i>Piper aduncum</i> L.		Brazil and Colombia <sup>[27]</sup>	
	<i>Piper cubeba</i> L.	fruit	Iran <sup>[6]</sup>	
	<i>Piper longum</i> L.	leaves / roots / fruit decoction	India <sup>[2, 11]</sup>	
	<i>Piper nigrum</i> L.	fruit decoction	Iran <sup>[6]</sup>	
Plantaginaceae	<i>Plantago major</i> L.	roots decoction	India <sup>[20]</sup>	
	<i>Plantago lanceolata</i> L.	leaves infusion	Mauritius <sup>[51]</sup>	
	<i>Plantanus orientalis</i> L.	fruit infusion	Turkey <sup>[64]</sup>	
Poaceae	<i>Bambusa nutans</i> Wall.	bamboo shoot	India <sup>[2, 5, 21]</sup>	
	<i>Coix lacryma-jobi</i> L.	roots		
	<i>Cymbopogon citratus</i> (DC.) Stapf.	plant decoction		
	<i>Cymbopogonschoenanthus</i> (L.) Spreng.	flowers	Iran <sup>[6]</sup>	
	<i>Cynodon dactylon</i> (L.) Pers.		rhizome decoction	India <sup>[8]</sup>
				Iran <sup>[79]</sup>
			Libya <sup>[32]</sup>	
			Yemen <sup>[1]</sup>	
			India <sup>[2]</sup>	
	<i>Elymus repens</i> (L.) Gould.	whole grass	Canada <sup>[41]</sup>	
	<i>Hordeum vulgare</i> L.	seeds decoction / infusion	Jordan <sup>[28]</sup>	
	<i>Lolium perenne</i> L.	aerial parts	Pakistan <sup>[52]</sup>	
	<i>Panicum miliaceum</i> L.	flower decoction	Bosnia and Herzegovina <sup>[30]</sup>	
	<i>Saccharum officinarum</i> L.	roots decoction	Turkey <sup>[65]</sup>	
	<i>Saccharum spontaneum</i> L.		Pakistan <sup>[52]</sup>	
<i>Vetiveria zizanioides</i> (Linn.) Nash.	India <sup>[2, 33]</sup>			
<i>Zea mays</i> L.		leaves / fruit	Bangladesh <sup>[91]</sup>	
		seed decoction	Palestine <sup>[37]</sup>	
		flowers decoction	Pakistan <sup>[60]</sup>	
			India <sup>[8]</sup>	
		Yemen <sup>[1]</sup>		
Polygalaceae	<i>Rumex hastatus</i> D. Don.	root extract	Pakistan <sup>[14, 92]</sup>	
Polygonaceae	<i>Emex spinosa</i> (L.) Campd.	leaves decoction		Turkey <sup>[46]</sup>
	<i>Polygonum cognatum</i> Meisn.			
	<i>Polygonum aviculare</i> L.	plant	Iran <sup>[6]</sup>	
	<i>Rheum emodi</i> Wall.	roots decoction	Pakistan <sup>[93]</sup>	
	<i>Rumex acetosa</i> L.		India <sup>[33]</sup>	
<i>Rumex acetosella</i> L.	Iran <sup>[6]</sup>			
Portulacaceae	<i>Portulaca oleracea</i> L.	aerial parts decoction	Turkey <sup>[65]</sup>	
Primulaceae	<i>Primula veris</i> L.	plant decoction	Palestine <sup>[37]</sup>	
Punicaceae	<i>Punica granatum</i> L.	seeds juice	Jordan <sup>[28]</sup>	
		fruit rind decoction		
Ranunculaceae	<i>Aquilegia fragrans</i> Benth.	roots	India <sup>[2, 38, 94]</sup>	
	<i>Nigella sativa</i> L.	seeds infusion		Iran <sup>[73]</sup>
				Pakistan <sup>[14]</sup>
				Palestine <sup>[22]</sup>
		Uzbekistan, Kyrgyzstan <sup>[24]</sup>		
		Iran <sup>[6]</sup>		
Rhamnaceae	<i>Sageretia brandrethiana</i> Atich, J. L. S.	roots decoction	Pakistan <sup>[13]</sup>	
	<i>Ziziphus lotus</i> (L.) Lam.	bark / roots infusion	Morocco <sup>[31]</sup>	
Rosaceae	<i>Amygdalus communis</i> var. <i>amara</i> L.	oil	Iran <sup>[6]</sup>	
	<i>Crataegus aronia</i> Decne.	leaves decoction	Palestine <sup>[29]</sup>	
	<i>Crataegus azarolus</i> L.	oleo gum resin	Iran <sup>[6]</sup>	
	<i>Crataegus monogyna</i> Jacq.	aerial parts infusion	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Crataegus pentagyna</i> L.		Turkey <sup>[64]</sup>	
	<i>Cerasus mahaleb</i> (L.) Miller var. <i>mahaleb</i>	seeds infusion	Bosnia, Herzegovina <sup>[30]</sup>	
	<i>Cerasus avium</i> (L.) Moench.	plant decoction	Turkey <sup>[95]</sup>	
<i>Duchesnea indica</i> (Andr.) Focke.	Iran <sup>[73]</sup>			
			India <sup>[20]</sup>	



	<i>Eriobotria japonica</i> L.	leaves decoction	Palestine <sup>[37]</sup>
	<i>Enhydra fluctuans</i> Lour.		
	<i>Fragaria nilgiriensis</i> Schltld. ex. J. Gay.	plant decoction	India <sup>[21, 26]</sup>
	<i>Potentilla anserina</i> L.		
	<i>Potentilla reptans</i> L.	roots decoction	Iran <sup>[6]</sup>
	<i>Prunus cerasus</i> L.	fruit	
	<i>Prunus puddum</i> Roxb. Ex Wallor <i>Prunus coracoides</i> D. Don.	kernel	India <sup>[88]</sup>
	<i>Prunus virginiana</i> L.		
	<i>Rosa beggeriana</i> Schrenk.ex Fisch. & C.A. Mey.	fruit	Iran <sup>[6, 73]</sup>
	<i>Fragaria indica</i> Andr.	plant decoction	India <sup>[59]</sup>
			Australia <sup>[44]</sup>
	<i>Rosa canina</i> L.	fruit decoction / infusion	Iran <sup>[79]</sup>
			Turkey <sup>[7, 64]</sup>
	<i>Rosa indica</i> L.	leaves decoction	
		flowers and buds	Pakistan <sup>[14]</sup>
	<i>Rubus caesius</i> L.	leaves / roots decoction / infusion	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
	<i>Rubus ellipticus</i> Smith.	fruit	Pakistan <sup>[14]</sup>
	<i>Rubus fruticosus</i> L.	fruit / flowers / roots	Iran <sup>[6]</sup>
	<i>Rubus sanctus</i> Schreber.	roots decoction	Turkey <sup>[65]</sup>
	<i>Coffea arabica</i> L.	seed husk beverage	Yemen <sup>[11]</sup>
	<i>Galium aparine</i> L.		America <sup>[40]</sup>
	<i>Galium verum</i> L.	plant decoction	India <sup>[33]</sup>
	<i>Hamelia patens</i> Jacq.	roots decoction	America <sup>[80]</sup>
	<i>Neolamarckia cadamba</i> (Roxb.) F. Bosser.	bark decoction	
	<i>Oldenlandia herbacea</i> (Linn.) Roxb.	plant decoction	India <sup>[2]</sup>
	<i>Paederia foetida</i> L.	leaves	Bangladesh <sup>[10]</sup>
Rubiaceae	<i>Rubia cordifolia</i> L.		India <sup>[2]</sup>
			Korea <sup>[96]</sup>
	<i>Rubia manjith</i> Roxb. ex Fleming.		India <sup>[76]</sup>
			Nepal <sup>[89]</sup>
		roots decoction	Bulgaria <sup>[97]</sup>
	<i>Rubia tinctorum</i> L.		Italian Peninsula <sup>[98]</sup>
			Turkey <sup>[99]</sup>
			Uzbekistan, Kyrgyzstan <sup>[24]</sup>
Rutaceae	<i>Aegle marmelos</i> L.	fruit / leaves	India <sup>[17, 87]</sup>
	<i>Citrus aurantifolia</i> (L.) (Christman) Swingle.	fruit juice	Pakistan <sup>[14]</sup>
	<i>Citrus latipes</i> (Swingle) Yu. Tanaka.	fruit infusion	
	<i>Citrus limon</i> (L.) Burm. f.		India <sup>[2, 20]</sup>
	<i>Citrus sinensis</i> (L.) Osbeck.	fruit juice	Pakistan <sup>[14]</sup>
Sapotaceae	<i>Manilkara zapota</i> (L.) P. Royen.	seeds decoction	Mexico <sup>[100]</sup>
	<i>Mimusops elengi</i> L.	bark decoction	India <sup>[2]</sup>
	<i>Pouteria sapota</i> (Jacq.) H. E. Moore & Stearn.	seeds decoction	Mexico <sup>[100]</sup>
Saxifragaceae	<i>Bergenia ciliata</i> (Haw.) Sternb.	roots decoction	
	<i>Bergenia ligulata</i> (Wall.) Engl.		India <sup>[101, 102]</sup>
	<i>Bergenia stracheyi</i> (Hook. f. & Thorns.) Engl.	rhizome decoction	Pakistan <sup>[14]</sup>
Scrophulariaceae	<i>Bonnaya brachiata</i> Link & Otto.		
	<i>Bonnaya reptans</i> (Roxb.) Spreng.	plant decoction	India <sup>[5, 20]</sup>
	<i>Buddleja polystachya</i> Fresen.		Yemen <sup>[11]</sup>
	<i>Scoparia dulcis</i> L.	root infusion	India <sup>[2]</sup>
	<i>Veronica orientalis</i> Miller.		Turkey <sup>[7]</sup>
	<i>Verbascum thapsus</i> L.	plant decoction	Uzbekistan, Kyrgyzstan <sup>[24]</sup>
Simaroubaceae	<i>Quassia amara</i> L.	macerated wood infusion	America <sup>[80]</sup>
			India <sup>[103]</sup>
	<i>Solanum nigrum</i> L.	plant decoction	Pakistan <sup>[14]</sup>
		seeds	
			India <sup>[8, 20]</sup>
	<i>Solanum surattense</i> Burm. f.	roots	Pakistan <sup>[14]</sup>
	<i>Solanum torvum</i> SW.	fruit/ seeds decoction	India <sup>[2]</sup>
	<i>Physalis alkekengi</i> L.	fruit decoction	Bulgaria <sup>[97]</sup>
			Iran <sup>[73]</sup>
	<i>Withania somnifera</i> L. Dunal.	plant decoction	Pakistan <sup>[104]</sup>
	<i>Solanum incanum</i> L.	roots juice	
	<i>Solanum virginianum</i> L.	roots decoction	India <sup>[18, 55]</sup>

Tamaricaceae	<i>Tamarix aphylla</i> (L.) Karst.	leaves decoction	Pakistan <sup>[14]</sup>	
Theaceae	<i>Annesley fragrans</i> Wall.		India <sup>[105]</sup>	
Tropaeolaceae	<i>Tropaeolum tuberosum</i> Ruiz & Pavón.	roots decoction	Bolivia and Peru <sup>[27]</sup>	
Typhaceae	<i>Typha latifolia</i> L.	leaves decoction	Pakistan <sup>[106]</sup>	
Ulmaceae	<i>Celtis timorensis</i> Span.		India <sup>[21]</sup>	
Urticaceae	<i>Forsskaolea tenacissima</i> L.		Morocco <sup>[31]</sup>	
	<i>Urtica dioica</i> L.		Palestine <sup>[107]</sup>	
	<i>Urtica pilulifera</i> L.		Turkey <sup>[7, 46]</sup>	
Valerianaceae	<i>Valeriana officinalis</i> L.	leaves raw eaten	Palestine <sup>[35]</sup>	
	<i>Valeriana wallichii</i> DC.	aerial parts decoction	Turkey <sup>[78]</sup>	
Verbenaceae	<i>Clerodendrum serratum</i> (Linn.) Moon.	roots decoction	Iran <sup>[6]</sup>	
	<i>Gmelina arborea</i> Roxb.	fruit infusion	India <sup>[11, 57, 108]</sup>	
	<i>Stachytarpheta indica</i> (L.) Vahl.	leaves juice		
	<i>Verbena officinalis</i> L.	aerial parts decoction		
	Vitaceae	<i>Vitex agnus-castus</i> L.	seeds decoction	Turkey <sup>[47]</sup>
		<i>Vitex negundo</i> L.	root decoction	India <sup>[55]</sup>
<i>Cissus adnata</i> Roxb.		leaves decoction	Pakistan <sup>[109]</sup>	
<i>Cissus gongyloides</i> (Burch. ex Baker) Planch.			India <sup>[2, 20]</sup>	
Zingiberaceae	<i>Vitis vinifera</i> L.	fruit juice	Austria <sup>[110]</sup>	
	<i>Costus arabicus</i> L.	roots oil	Iran <sup>[6]</sup>	
	<i>Elettaria cardamomum</i> (Linn.) Maton.	fruit	India <sup>[2, 20, 21]</sup>	
<i>Hedychium aurantiacum</i> Rosc.	stem			
<i>Hedychium coronarium</i> J. Koenig.	rhizome infusion			
Zygophyllaceae	<i>Larrea tridentata</i> (DC.) Coville.	leaves decoction	Mexico <sup>[27]</sup>	
	<i>Paliurus spina—christi</i> Miller.	fruit decoction	Turkey <sup>[99]</sup>	
	<i>Peganum harmala</i> L.		Iran <sup>[6]</sup>	
	<i>Tribulus terrestris</i> L.	leaves decoction / infusion	India <sup>[38]</sup>	
			Iran <sup>[73]</sup>	
			Pakistan <sup>[9]</sup>	
			India <sup>[8]</sup>	
			Iran	
			Turkey <sup>[64]</sup>	
	seeds decoction / infusion	Yemen <sup>[11]</sup>		
India <sup>[2]</sup>				
Pakistan <sup>[109]</sup>				
Iran <sup>[6]</sup>				
roots decoction	India <sup>[111]</sup>			

Table 2: Number of antiurolithiatic plants with respect to family

Family	Plants	Family	Plants	Family	Plants
Acanthaceae	07	Costaceae	02	Oxalidaceae	03
Acoraceae	01	Crassulaceae	03	Paeoniaceae	01
Adiantaceae	01	Cucurbitaceae	13	Papilionaceae	05
Aizoaceae	01	Cupressaceae	07	Periplocaceae	01
Alismataceae	01	Cyperaceae	02	Phyllanthaceae	04
Amaranthaceae	10	Ebenaceae	01	Pinaceae	04
Amaryllidaceae	05	Ericaceae	04	Piperaceae	05
Anacardiaceae	03	Equisetaceae	05	Plantaginaceae	03
Annonaceae	01	Euphorbiaceae	15	Poaceae	15
Apiaceae	19	Fabaceae	24	Polygalaceae	01
Apocynaceae	03	Fagaceae	04	Polygonaceae	05
Aquifoliaceae	01	Gentianaceae	01	Portulacaceae	01
Araceae	01	Gesneriaceae	03	Primulaceae	01
Araliaceae	01	Hyacinthaceae	01	Punicaceae	01
Arecaceae	02	Hypericaceae	03	Ranunculaceae	02
Asclepiadaceae	01	Hydrangeaceae	01	Rhamnaceae	02
Asparagaceae	02	Illecebraceae	01	Rosaceae	26
Aspleniaceae	02	Lamiaceae	25	Rubiaceae	10
Asteraceae	41	Lauraceae	08	Rutaceae	01
Averrhoaceae	01	Lemnaceae	01	Rutaceae	04
Berberidaceae	01	Liliaceae	08	Sapotaceae	03
Betulaceae	03	Linderniaceae	01	Saxifragaceae	03
Bombacaceae	01	Loganiaceae	01	Scrophulariaceae	06
Boraginaceae	09	Loranthaceae	01	Simaroubaceae	01
Brassicaceae	10	Lythraceae	02	Solanaceae	08
Bromeliaceae	01	Malvaceae	10	Tamaricaceae	01

Burseraceae	01	Menispermaceae	04	Theaceae	01
Caesalpinaceae	07	Mimosaceae	01	Tropaeolaceae	01
Cannabaceae	01	Moraceae	02	Typhaceae	01
Capparidaceae	03	Moringaceae	01	Ulmaceae	01
Caricaceae	01	Musaceae	03	Valerianaceae	02
Celastraceae	01	Myrtaceae	04	Verbenaceae	06
Chenopodiaceae	03	Nyctaginaceae	01	Vitaceae	03
Combretaceae	01	Oleaceae	03	Zingiberaceae	03
Campanulaceae	01	Onagraceae	01	Zygophyllaceae	04
Convolvulaceae	02	Orchidaceae	01		

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