

REVIEW

HYPOLIPIDEMIC HERBALS WITH DIURETIC EFFECTS: A SYSTEMATIC REVIEW

Hojjat Rouhi-Boroujeni¹, Hamid Rouhi-Boroujeni², Minasadat Khoddami³,
Hamid Reza Khazraei⁴, Ehsan Bakhshian Dehkordi⁴, Mahmoud Rafieian-kopaei^{5*}

¹Member of Student Research Committee, Medical Plants Research Center, Shahrekord University of Medical Sciences, Shahrekord, IRAN

²Pulmonologist, Associate professor of Clinical Biochemistry, Shahrekord University of Medical Sciences, Shahrekord, IRAN

³Pharmacist, Medical Plants Research Center, Shahrekord University of Medical Sciences, Shahrekord, IRAN

⁴Cellular and Molecular Research Center, Shahrekord University of Medical Sciences, Shahrekord, IRAN

^{5*} Professor of Pharmacology, Medical Plants Research Center, Shahrekord University of Medical Sciences, Shahrekord, IRAN

ABSTRACT

Due to the high side effects of synthetic drugs, also versatile plant rather than poly-therapy by chemical drugs, the use of medicinal plants is common. Many medicinal plants in addition to effects on hyper lipidemia, are diuretic. The aim of this systematic review was introduced lipid-lowering plant with diuretic effects. The international research databases including MEDLINE; Google scholar, Web of Science SciVerse Scopus (SCOPUS); EBSCO Academic Search; Cochrane Central Register of Controlled Trials (CENTRAL); and a Chinese database (China Network Knowledge Infrastructure [CNKI]) were searched from their respective inceptions up to Mars 2015 with the search terms of "hyperlipidemia", "herbal medicine", "medicine traditional", "extract plant", "Traditional Medicine" and " Chinese Herbal Medicine" "Botany in hyperlipidemia", "Herbal in hyperlipidemia", "Herbal in hypercholesterolemia", "Herbal therapy in hypertriglyceridemia", "Systematic Review of herbal in hyperlipidemia", "Natural remedies for hyperlipidemia", "Herbal medicine for cholesterolemia", "Herbal with antilipid effect", "Herbal therapy for Atherosclerosis", "Hyperlipidemia diet" and "herbal as diuretics", "herbal therapy for edema", herbal medicine as diuretics", "herbal diuretic list", "Herbal diuretic review" without narrowing or limiting search elements. Finally, among of 2003 article, 20 plants that not only effected on hyperlipidemia but also was diuretic, selected and introduced.

INTRODUCTION

Herbal medicine, use of plants for medicinal purposes, has a long history in disease treatment and in health maintenance. Side effects of chemical drugs and lack of access to poly therapy chemical drugs have given more significance to the therapeutic importance of herbal medicine for the improvement of human health. So far, a wide variety of plants with therapeutic effect on serum lipid profile are explored and more than 200 plants with lipid lowering effect have been investigated. Nevertheless, there are great numbers of unknown plants with lipid lowering activity yet to be investigated. On the other hand, there are many hyperlipidemic patients who are diagnosed with hypertension or edema as well. Therefore, the importance of herbs which have diuretic properties in addition to their lipid lowering effect is more appreciated. Herbs with long term lipid lowering effect and diuretic side effects can replace the multi therapeutic medicines. The purpose of this systematic study was to explore lipid lowering plants with diuretic properties and their particular applications [1-24].

MATERIALS AND METHODS

First, 2003 published papers including abstracts, full papers and 31 review papers were evaluated and were classified in two separate checklists. The first checklist was comprising information on plants with anti lipid effect along with their dosage and important consumption information. For this information, a comprehensive literature review on reliable databases such as PubMed, Google Scholar, Scopus, Medline and Web of Science was conducted using following main keywords: Botany in hyperlipidemia, Herbal in hypercholesterolemia, Herbal therapy in hypertriglyceridemia, systematic Review of herbal in hyperlipidemia, natural remedies for hyperlipidemia, herbal medicine for cholesterolemia, herbal with anti lipid effect, herbal therapy for Atherosclerosis, Hyperlipidemia diet. In addition, for information on diuretic plants main keywords such as Herbal as diuretics, herbal therapy for edema, herbal medicine as diuretics, herbal diuretic list, herbal diuretic review, herbal tea as diuretic were used. At the end, using the tables, plants which had diuretic effect in addition to their lipid lowering properties were identified and were positioned into [Table 3].

RESULTS

47 plants have high diuretic effects, including: *Aloysia citrodora*, *Ananas comosus*, *Anethum graveolens*, *Aparagus officinale*, *Artemisia vulgaris*, *Avena sativa*, *Braberis vulgaris*, *Boswellio carteri*, *Brassica rapa*, *Calendula officinalis*, *Chicorium intybus*, *Citrus limon*, *Cucumis sativus*, *Curcubita pepo*, *Cydonia oblonga*,

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*Corresponding Author
Email:
dr_rohib@yahoo.com

Daucus carota, Descurainia Sophia, Equiestum arvense, Ferula assa-foetida, Ficus carica, Hordeum vulgare, Hypericum perforatum, Laurus nobilis, Medicago sativa, Mentha pulegium, Morus alba, Morus nigra, Nasturtium officinale, Nepeta cataria, Nigella sativa, Petroselinum crispum, Phaseolus vulgaris, Pistacia vera, Prunus avium, Punica granatum, Portulaca oleraceae, Satureja hortensis, Solanum lycopersicum, Solanum, melongena, Tea sinensis, Terminalia chebula, Tussilago farfara, Urtica dioica, Vicia faba and Zea mays. Other properties listed in [Table 1].

Achillea millefolium, Allium cepa, Allium sativum, Anethum graveolens, Apium graveolens, Arctium Loppa, Avena sativa, Braberis vulgaris, Brassica oleracea, Capsicum frutescens, Carthamus tinctorius, Chicorium intybus, Cicer arietinum, Citrus aurantifolia, Citrus aurantium, Commiphora mukul, Coriandrum sativum, Cornus mas, Cucumis melo L, Cucurbita pepo, Cynara cardunculus, Eleuthero coccus, Eugenia jambolana, Ferulago angulate, Ginkgo biloba, Glycine soja, Juglans regia, Malus orientalis, Miristica fragrans, Monascus purpureus, Musa paradisiaca, Oenothera biennis, Ocimum basilicom, Osmium sanctum, Orchis latifolia, Persea Americana, Plantago Lanceolata, Plantago ovate, Phaseolus unlgaris, Poryulaca oleracea, Prunus cerasus, Punica granatcm, Sipybum marinum, Solanum melongena, Solanum lycopersicum, Tamarindus indices, Thea sinesis, Terminalia chebula, Thymus volgaris, Trigonella foenum, Vaccinium myrtillus, Vitis vinifera, Zingiber officinalis and Zea mays had favorable effects on hyperlipidemia. Other plant characteristics are summarized in [Table 2].

20 plants containing both lipid-lowering effect and a diuretic, which includes: *Achillea millefolium, Allium cepa, Allium sativum, Anethum graveolens, Apium graveolens, Avena sativa, Braberis vulgaris, Chicorium intybus, Cornus mas, Ocimum basilicom, Plantago Lanceolata, Prunus cerasus, Punica granatcm, Solanum lycopersicum, Thea sinesis, Terminalia chebula, Thymus volgaris, Vaccinium myrtillus, Zingiber officinalis and Zea mays* [Table 3]. In addition to the scientific name of the plant, the common name, the use and safety of these plants in pregnancy is shown.

Table 1: Herbs with diuretic effects

Scientific name	Common name	Family	Part of used	Special Notes	References
<i>Achillea millefolium</i>	Yarrow	Asteraceae	Leaf	Prohibited in pregnancy	1
<i>Aloysia citrodora</i>	Lemon verbena	Verbenaceae	Leaf	Do not use more than two grams.	2
<i>Ananas comosus</i>	Pineapple	Bromeliaceae	Fruit	The synergistic effect of anticoagulant drugs.	3
<i>Anethum graveolens</i>	Dill	Apiaceae	Leaf	Do not use herbal remedies contain this herb in pregnancy.	4
<i>Aparagus officinale</i>	Gorden Asparagus	Asparagaceae	Root	Prohibited in pregnancy and lactation	5
<i>Artemisia vulgaris</i>	Mugwort	Compositae	Leaf	Prohibited in pregnancy and lactation	6
<i>Avena sativa</i>	Oats	Germinaceae	Fruit	Don't use in celiac disease.	7
<i>Braberis vulgaris</i>	Barbery	Berberidaceae	Root and fruit		8
<i>Boswellio carteri</i>	Indian tree	Burceraceae	Resin	Maximum dose 2 g daily	9
<i>Brassica rapa</i>	Turip	Brassicaceae	Fruit , Seed	-	10
<i>Calendula officinalis</i>	Marigold	Compositae	Flower	Prohibited in pregnancy and lactation	11
<i>Chicorium intybus</i>	Chicory	Compositae	Root	May cause dermatitis	12
<i>Citrus limon</i>	Lemon	Rutaceae	Fruit	To be used for diluted	13
<i>Cucumis sativus</i>	Cucumber	Cucurbitaceae	Fruit	-	14
<i>Curcubita pepo</i>	Pumpkinseed	Curcubitaceae	Fruit	-	15
<i>Cydonia oblonga</i>	Quince	Rosaceae	Fruit	-	16
<i>Daucus carota</i>	Carrot	Umbelliferae	Fruit	Seed, don't use in hypertension and pregnancy.	17
<i>Descurainia sophia</i>	Flix weed	Brassicaceae	Seed	-	18
<i>Equiestum arvense</i>	Horsetail	Equisetaceae		Do not use orally during pregnancy and latation	19
<i>Ferula assa-foetida</i>	Asafetida	Umbelliferae	Gum	Do not use orally during pregnancy and latation	20
<i>Ficus carica</i>	Fig	Moraceae	Leaf and fruit	Do not use if allergic to fig leaf acquired.	21
<i>Hordeum vulgare</i>	Barely	Germinaceae	Seed	Don't use in celiac disease.	22
<i>Hypericum perforatum</i>	St.john's wort	Hypericaceae	Flowering branches	Do not use orally during pregnancy and lactation.	23
<i>Laurus nobilis</i>	Lauro	Lauraceae	Fruit	Do not use orally during pregnancy and lactation.	24
<i>Medicago sativa</i>	Alfalfa	Leguminaceae	Leaf	Dont use orally during pregnancy and lactation.	25
<i>Mentha pulegium</i>	European pennyroyal	Labiatae	Leaf	The maximum dose of dried plant is 4 g/day. Do not use orally during pregnancy.	26
<i>Morus alba</i>	Block mulberry	Moraceae	Fruit, Leaf	-	27
<i>Morus nigra</i>	Block mulberry	Moraceae	Fruit, Leaf	-	28

<i>Nasturtium officinale</i>	Water cress	Brassicaceae	Leaf	Do not use orally during pregnancy and lactation.	29
<i>Nepeta cataria</i>	Catnip	Labiatae	Leaf	Do not use herbal remedies contain this herb in pregnancy.	30
<i>Nigella sativa</i>	Black cumin	Ranunculaceae	Seed	Black seed oil supplementation in pregnancy should be avoided.	31
<i>Petroselinum crispum</i>	Parsely	Umbelliferae	Leaf	Supplementary of this herb should be avoided in pregnancy.	32
<i>Phaseolus vulgaris</i>	Common bean	Leguminosae	Fruit	Contraindicated in gout.	33
<i>Pistacia vera</i>	Pistachio	Anacardiaceae	Fruit	-	34
<i>Pronus avium</i>	Cherry	Rosaceae	Fruit, Cherry tails	Cherry tails has potent diuretic effect.	35
<i>Punica granatum</i>	Pomegranate	Punicaceae	Fruit	-	36
<i>Purtolaca oleraceae</i>	Purstone	Purtulaceae	Leaf	-	37
<i>Satureja hortensis</i>	Savory	Labiatae	Leaf	-	38
<i>Solanum lycopersicum</i>	Tomato	Solanaceae	Fruit	Maximum 100 g	39
<i>Solanum melongena</i>	Brinjal	Solanaceae	Fruit	Contraindicated in acute asthmatic patient.	40
<i>Tea sinensis</i>	Tea	Theaceae	Leaf	-	41
<i>Terminalia chebula</i>	Haritali	Combretaceae	Fruit	supplementary in pregnancy should be avoided.	42
<i>Tussilago farfara</i>	Cast foot	Compositae	Umbelliferae	Do not use orally during pregnancy and lactation.	43
<i>Urtica dioica</i>	Nettle	Urticaceae	Root, Leaf	Do not use orally during pregnancy and lactation.	44
<i>Vicia faba</i>	Bell bean	Fabaceae	Fruit	Contraindicated in Favism and use caution with MAO Inhibitors.	45
<i>Zea mays</i>	Corn	Geramineae	Tasell	Potent diuretic	46

Table 2: Herbs with hypolipidemic effects

Scientific name	Common name	Family	Part of used	Special Notes	References
<i>Achillea millefolium</i>	Yarrow	Asteraceae	Flower	Prohibited in pregnancy	47
<i>Allium cepa</i>	Onion	Liliaceae	Bulb	--	48
<i>Allium sativum</i>	Garlic	Liliaceae	Bulb	GI problems	49
<i>Anethum graveolens</i>	Dill	Apiaceae	Seed, Leaf	Prohibited in pregnancy	50
<i>Apium graveolens</i>	Celery	Umbellifera	Leaf	Asthma	51
<i>Arctium Loppa</i>	Burdock	Compositae	Root	Prohibited in pregnancy	52
<i>Avena sativa</i>	Oats	Germinaceae	Seed	Prohibited in pregnancy	53
<i>Braberis vulgaris</i>	Barbery	Berberidaceae	Fruit	Root and fruit	54
<i>Brassica oleracea</i>	Cabbage	Brassicaceae	Leaf	In hypertension and hypothyroidism	55
<i>Capsicum frutescens</i>	American peoer	Solanaceae	Fruit	Prohibited in pregnancy	56
<i>Carthamus tinctorius</i>	Saf flower	Compositae	Flower	Prohibited in pregnancy	57
<i>Chicorium intybus</i>	Chicory	Compositae	Root	May cause dermatitis	58
<i>Cicer arietinum</i>	Chickpea		Seed	--	59
<i>Citrus aurantifolia</i>	Bitter orange christm lime	Rutaceae	Fruit	Prohibited in pregnancy	60
<i>Citrus aurantium</i>	Orange	Rutaceae	Fruit	--	61
<i>Commiphora mukul</i>	Guggul	Burseraceae	Gum	Prohibited in pregnancy	62
<i>Coriandrum</i>	Coriander	Umbelliferae	Fruit	-	63

<i>sativam</i>					
<i>Cornus mas</i>	Cranberry	Cornaceae	Fruit	-	64
<i>Cucumis melo L</i>	Melon	Cucurbitaceae	Fruit	--	65
<i>Cucurbita pepo</i>	Pumpkin	Cucurbitaceae	Seed	Prohibited in pregnancy	66
<i>Cynara cardunculus</i>	Artichoke	Compositae	Leaf	Dermatitis susceptibility	67
<i>Eleuthero coccus</i>	Ginseng	Araliaceae	Rhizome	Prohibited in pregnancy	68
<i>Eugenia jambolana</i>	Eugenol	Myrtaceae	Leaf	Prohibited in pregnancy	69
<i>Ferulago angulata</i>	Schelecht	Umbelliferae	leaf	-	70
<i>Ginko biloba</i>	Ginko	Ginkgoaceae	Leaf	--	71
<i>Glycine soja</i>	Soy	Legomumino sae	Seed	Prohibited in pregnancy	72
<i>Juglans regia</i>	Walnut	Juglandacea e	Core	--	73
<i>Malus orientalis</i>	Apple	Rosaceae	Fruit	--	74
<i>Miristica fragrans</i>	Nutmeg	Myristicaceae	Seed	Prohibited in pregnancy	75
<i>Monascus purpureus</i>	Red yeast rice	Monascacea e	Seed	Liver disease	76
<i>Musa paradisiaca</i>	Miswak	Musacea e	Rhizome	--	77
<i>Oenothera biennis</i>	Evening primrose	Onagraceae	Seed	Prohibited in pregnancy	78
<i>Ocimum basilicom</i>	Basil	Labiatae	Leaf	--	79
<i>Osmium sanctum</i>	Bulacy	Labiatae	Leaf	--	80
<i>Orchis latifolia</i>	Orchis	Orchidaceae	Root	--	81
<i>Persea americana</i>	Avocado	Lauraceae	Seed , Fruit	--	82
<i>Plantago Lanceolata</i>	Plantain	Plantaginace ae	Leaf , Seed	Prohibited in pregnancy	83
<i>Plantago ovate</i>	Blond plotitago	Plantaginace ae	Seed	--	84
<i>Phaseolus unlgaris</i>	Comman bean	Fabacea e	Seed	Gout	85
<i>Poryulaca oleracea</i>	Purslane	Portulacacea e	Leaf	--	86
<i>Prunus cerasus</i>	Black cherry	Rosacea e	Fruit	--	87
<i>Punica granatcm</i>	Pomegra nate	Punicaceae	Seed	--	88
<i>Sipybum marinum</i>	Milk thistle	Asteraceae	Fruit , Seed	--	89
<i>Solanum melongena</i>	Brinjal	Solanace ae	Fruit	Allergic effects	90
<i>Solanum lycopersicum</i>	Tomato	Solanaceae	Fruit	--	91
<i>Tamarindus indices</i>	Tamarind	<u>Fabaceae</u>	Seed	Prohibited in pregnancy	92
<i>Thea sinesis</i>	Thea	Theaceae	Leaf	Prohibited in pregnancy	93
<i>Terminalia chebula</i>	Common Thyme	Umbelliferae	Fruit	Prohibited in pregnancy	94
<i>Thymus vulgaris</i>	Thyme	Labiatae	Leaf	Prohibited in pregnancy	95
<i>Trigonella foenum</i>	Fenugree k	Leguminosae	Seed	Prohibited in pregnancy	96
<i>Vaccinium myrtillus</i>	Bilberry	Ericaceae	Fruit	GI problems	97
<i>Vitis vinifera</i>	Blackcurr an	Vitaceae	Fruit	--	98
<i>Zingiber officinalis</i>	Ginger	Zingiberacea e	Root	Cardiac arrhythmia	99
<i>Zea mays</i>	Corn	Geramineae	Seed	--	100

Table 3: Hypolipidemic herbal with diuretic effects

Scientific name	Common name	Family	Part of used	Special Notes
<i>Achillea millefolium</i>	Yarrow	Asteraceae	Leaf	Prohibited in pregnancy
<i>Allium cepa</i>	Onion	Liliaceae	Bulb	--
<i>Allium sativum</i>	Garlic	Liliaceae	Bulb	GI problems
<i>Anethum graveolens</i>	Dill	Apiaceae	Seed, Leaf	Prohibited in pregnancy
<i>Apium graveolens</i>	Celery	Umbellifera	Leaf	Prohibited in acute asthma and other allergic reaction
<i>Avena sativa</i>	Oats	Gramineae	Seed	Prohibited in pregnancy
<i>Braberis vulgaris</i>	Barbery	Berberidaceae	Root and fruit	Root and fruit
<i>Chicorium intybus</i>	Chicory	Compositae	Root	May cause dermatitis
<i>Cornus mas</i>	Cran berry	Cornaceae	Fruit	Safe in pregnancy
<i>Ocimum basilicom</i>	Basil	Labiatae	Leaf	--
<i>Plantago lanceolata</i>	Plantain	Plantaginaceae	Leaf , Seed	Prohibited in pregnancy
<i>Prunus cerasus</i>	Black cherry	Rosaceae	Fruit	--
<i>Punica granatcm</i>	Pomegranate	Punicaceae	Seed	--
<i>Solanum lycopersicum</i>	Tomato	Solanaceae	Fruit	--
<i>Thea sinesis</i>	Thea	Theaceae	Leaf	Prohibited in pregnancy
<i>Terminalia chebula</i>	chebulic myrobalan	Umbelliferae	Fruit	Prohibited in pregnancy
<i>Thymus vulgaris</i>	Thyme	Lmiaceae	Leaf	Prohibited in pregnancy
<i>Vaccinium myrtillus</i>	Bilberry	Ericaceae	Fruit	GI problems
<i>Zingiber officinalis</i>	Ginger	Zingiberaceae	Root	Cardiac arrhythmia
<i>Zea mays</i>	Corn	Geramineae	Seed	--

DISCUSSION

In this study it was discerned that great number of plants with evident impact on hyperlipidemia, have not demonstrated significant diuretic effects or it has not been reported yet. One of the possible reasons for lack of sufficient studies in this area is that studies on plants with therapeutic effects are newly emerged. Plants such as *Ferulago angulate*, *Moringa peregrina* and *Peucedanum membranacum* have significant effect on hyperlipidemia; however, studies on their diuretic effects need to be conducted. In addition, there are some plants which have demonstrated both diuretic properties and effects on hyperlipidemia, the most well-known of which are Onion, Garlic, Pomegranate, Dill, Chicory, Dandelion, Green Tea, Stinging Nettle, Yarrow, Parsley, Celery, Apple Cider Vinegar, Tomatoes, Cranberry. Among them, plants with permitted consumption in pregnancy such as cranberry and pomegranate have caught more attention. In our study, many clinical studies carried out that most of the plants: Garlic, Zinger, Chicory, Thyme, Pomegranate, Cranberry, Sumac and Lemon done that meet both the therapeutic effect.

CONFLICT OF INTEREST

There is no conflict of interest.

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None

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