



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2017; 6(4): 1028-1031
Received: 06-05-2017
Accepted: 07-06-2017

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Antiuro lithiatic potential of globally used medicinal plants belonging to the family Rosaceae

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Abstract

Urolithiasis is a common worldwide problem with high recurrence. This review covers the forty one (41) antiuro lithiatic plants of family Rosaceae used in 14 different countries. Hopefully, this review will not only be useful for the general public but also attract the scientific world for antiuro lithiatic drug discovery.

Keywords: Urolithiasis, antiuro lithiatic, natural products, drug development, Rosaceae

Introduction

Urolithiasis is a common worldwide problem with high recurrence. This review covers the forty one (41) medicinal plants of family Rosaceae used in 14 different countries such as Australia, Bosnia Herzegovina, Canada, India, Iran, Italy, Jordan, Pakistan, Palestine, Serbia, Spain, Tunisia Turkey and Uzbekistan. Their historical antiuro lithiatic background shared in well-known books of Ibn Sina (05 plants), Dioscorides (03 plants), Al Razi (02 plants) and Daoud al- Antaki (01 plant). Among the plant parts fruits were noted the most common (32%) followed by flowers (16%), leaves (14%), whole plant (12%), seeds and roots (10% each) and aerial parts (06 %). In terms of preparation, decoction was observed the most common (72%), followed by infusion (20%), juices and oleo gum resin (04% each). The route of administration is oral in all cases. Hopefully, this review will not only be useful for the general public but also attract the scientific world for antiuro lithiatic drug discovery.

Abbreviations Used

h. = hour.
OD = once daily.
QID = four times a day.
tbsp. = table spoon.
TID = three times a day.
tsp. = tea spoon.
Days = days required to dissolve / expel kidney stones.
Before breakfast = every morning in empty stomach.
Whewellite: Calcium oxalate monohydrate.

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Table 1: Antiurolithiatic plants of family Rosaceae.

Plants	Explanation
<i>Alchemilla alpina</i> L.	Aerial parts decoction --- Spain ^[1] .
<i>Amygdalus communis</i> var. <i>amara</i> L. OR <i>Prunus amygdalus</i> var. <i>amara</i> (DC.) Focke.	Dioscorides (De Materia Medica): Seeds are diuretic ^[2] .
	Al Razi / Rhazes (Al-Hawi fi al-Tibb): Seeds are litholytic and used against dysuria ^[2] .
	Seeds --- Iran ^[3] , Uzbekistan ^[4] .
<i>Prunus amygdalus</i> var. <i>dulcis</i> (Borkh. ex DC.) Koehne.	Uzbekistan: 1 tbsp. of pounded seed BD along with water ^[4] .
	Pharmacological activities: Antioxidant ^[5] .
<i>Amygdalus arabica</i> Olivier.	Fruits --- Iran ^[6] .
<i>Cerasus mahaleb</i> (L.) Miller.	Fruits --- Iran ^[6] ; seeds infusion --- Turkey ^[3] .
<i>Cerasus microcarpa</i> (C. A. Mey.) Boiss.	Fruits --- Iran ^[6] .
<i>Crataegus aronia</i> Decne.	Leaves decoction --- Jordan ^[7] ; Palestine ^[3] ; matured fruits / flowers decoction -- Turkey ^[8] .
	Pharmacological activities: Leaves: Antioxidant, diuretic, litholytic ^[5] .
<i>Crataegus azarolus</i> L.	Ibn Sina (Al Qanoon Fit Tibb): Fruits / oleo gum resin is litholytic and expels stones ^[2] .
	Oleo gum resin --- Iran ^[3] .
	Pharmacological activities: Antioxidant ^[5] .
<i>Crataegus monogyna</i> Jacq.	Aerial parts infusion --- Bosnia, Herzegovina, Turkey ^[3] .
	Pharmacological activities: Anti-inflammatory ^[5] .
<i>Crataegus pentagyna</i> L.	Aerial parts infusion --- Bosnia, Herzegovina ^[3] .
	Pharmacological activities: Antioxidant ^[5] .
<i>Cerasus avium</i> (L.) Moench.	Flowers decoction --- Iran ^[9] , Turkey ^[10] .
	Turkey: 125 ml of flower decoction BD for 7 – 10 days ^[10] .
	Pharmacological activities: Anti-inflammatory ^[9] .
<i>Cerasus vulgaris</i> Mill.	Flowers decoction --- Turkey ^[10] .
	Turkey: 125 ml of flower decoction BD for 5 – 10 days ^[10] .
<i>Cydonia oblonga</i> Mill.	Dioscorides (De Materia Medica): Flowers / fruits are diuretic ^[2] .
	Leaves decoction --- Turkey ^[10] .
<i>Docynia indica</i> (Wall.) Decne.	Fruits --- India ^[11] .
	Pharmacological activities: Lithotriptic ^[11] .
<i>Duchesnea indica</i> (Andr.) Focke.	Plant decoction --- India ^[3] .
	Pharmacological activities: Anti-inflammatory, antioxidant ^[5] , lithotriptic ^[11] .
<i>Eriobotria japonica</i> L.	Leaves decoction --- Palestine ^[3] .
	Israel: Boil 7 to 8 leaves in one L of water. 150 ml BD for 14 days ^[12] .
	Pharmacological activities: Analgesic, anti-inflammatory, litholytic ^[5] .
<i>Enhydra fluctuans</i> Lour.	Plant decoction --- India ^[3] .
	India: Boil 5 g plant powder in one L of water. 100 ml BD for 7 days ^[12] .
	Pharmacological activities: Lithotriptic ^[11] .
<i>Filipendula vulgaris</i> Moench.	Root decoction --- Serbia ^[13] .
	Pharmacological activities: Lithotriptic ^[5] .
<i>Fragaria nilgerrensis</i> Schltdl. ex J. Gay.	Plant decoction --- India ^[3] .
	India: Boil 5 g of plant in one L of water with a little sugar candy. 100 ml OD till stone expulsion ^[12] .
	Pharmacological activities: Lithotriptic ^[11] .
<i>Fragaria indica</i> Andr.	Plant decoction --- India ^[3] .
	Pharmacological activities: Lithotriptic ^[11] .
<i>Pirus communis</i> L.	Fruits --- Iran ^[6] .
<i>Potentilla anserina</i> L.	Whole plant decoction--- India ^[3] .
	Pharmacological activities: Lithotriptic ^[11] .
<i>Potentilla reptans</i> L.	Sina (Al Qanoon Fit Tibb): Roots are litholytic and expel stone ^[2] .
	Roots decoction --- Iran ^[3] .
<i>Prunus avium</i> (L.) L. OR <i>Prunus cerasus</i> L. OR <i>Cerasus avium</i> (L.) Moench.	Ibn Sina (Al Qanoon Fit Tibb): Fruits are litholytic and expel stones ^[2] .
	Fruit raw eaten / Plant decoction --- Iran ^[3] ; flowers decoction --- Iran ^[6] , Turkey ^[14] ; stem decoction --- Turkey ^[15] ; fruit juice --- Palestine ^[16] .
	Palestine: 100 ml of fresh wild cherry juice are to be given orally four times a day ^[16] .
	Pharmacological activities: Antioxidant, diuretic, lithotriptic ^[5] .
<i>Prunus cerasoides</i> Buch.-Ham. ex D.Don.	Seeds chewed --- India ^[17] .
<i>Prunus domestica</i> L.	Daoud al-Antaki (Tadhkirat Uli l-al-Bab wa l-Jami li-L-‘Ajab al-‘Ujab): Fruit juice is litholytic ^[18] .
<i>Prunus mahaleb</i> L.	Al Razi / Rhazes (Al-Hawi fi al-Tibb): Litholytic ^[2] .
<i>Prunus puddum</i> Roxb. ex Wall. or <i>Prunus coracoides</i> D. Don.	Kernel --- India ^[3] .
	India: 24 - 45 g of kernel daily ^[12] .
<i>Prunus virginiana</i> L.	Ibn Sina (Al Qanoon Fit Tibb): Fruits are useful in urinary stone ^[2] .
	Fruits --- Iran ^[3] .
<i>Pyracantha crenulata</i> (Roxb. ex D.Don) M. Roem.	Fruits --- India ^[19] .
	Pharmacological activities: Litholytic ^[19] .

	Antiuro lithiatic spectrum (reported): Fruits against whewellite ^[20] .
<i>Pyrus communis</i> L.	Ripe fruits eaten --- India ^[21] .
	Pharmacological activities: Diuretic ^[5] .
<i>Rosa beggeriana</i> Schrenk ex Fisch. & C.A.Mey.	Fruits --- Iran ^[9] .
<i>Rosa canina</i> L.	Fruits / leaves / seeds infusion --- Lebanon ^[22] ; fruits decoction or infusion --- Australia, Canada, Iran, Turkey ^[3, 12] ; flowers --- Iran ^[6] ; leaves decoction --- Turkey ^[3] ; leaves infusion --- Italy, Tunisia ^[23] .
	Canada: 1 tsp. rose hips in 8 oz. hot water, cover for 60 mins then filter. 4 oz. TID till stone expulsion ^[12] . Iran: Infusion of 2 tsp. dried fruits in 250 ml of water. 250 ml OD till stone expulsion ^[12] .
	Pharmacological activities: Analgesic, anti-inflammatory, antioxidant, diuretic ^[5] , lithotriptic ^[24] .
	Antiuro lithiatic spectrum (reported): Fruits against whewellite ^[24] .
<i>Rosa indica</i> L.	Flowers and buds --- Pakistan ^[3] .
	Pharmacological activities: Analgesic ^[5] .
<i>Rubus caesius</i> L.	Leaves or roots decoction or roots infusion --- Uzbekistan, Kyrgyzstan ^[3] .
<i>Rubus ellipticus</i> Smith.	Fruits --- Pakistan ^[3] .
	Pharmacological activities: Analgesic, antioxidant ^[5] .
<i>Rubus fruticosus</i> L.	Ibn Sina (Al Qanoon Fit Tibb): Fruits / flower / roots are litholytic and expel stones ^[2] .
	Fruits / flowers / roots --- Iran ^[3] .
<i>Rubus niveus</i> Thunb.	Fruits / leaves / seeds --- India ^[11, 25] .
	Pharmacological activities: Lithotriptic ^[5] .
<i>Rubus sanctus</i> Schreber.	Roots decoction --- Turkey ^[3] .
	Turkey: 250 ml of roots decoction drunk on an empty stomach OD ^[26] .
	Pharmacological activities: Analgesic, antioxidant, anti-inflammatory, litholytic ^[5] .
<i>Sorbus domestica</i> L.	Leaves decoction --- Turkey ^[10] .
	Turkey: 125 ml of leaves decoction BD for 8 – 15 days ^[10] .

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