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Review Article

GULNAR (*PUNICA GRANATUM* LINN.): A PLANT ORIGIN DRUG OF UNANI MEDICINE

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ABSTRACT

Punica granatum belongs to the family Punicaceae. Gulnar is a very significant herbal drug in Unani system of medicine. This meticulous herb have Antidiabetic, Antiulcer activity, Antioxidant activity, Allergenic activity, Anti-inflammatory activity and it is used to treat a variety of diseases especially *Zaheer* (dysentery), *Nazf-ud-dam* (hematemesis), *Sual* (cough), *Khurooje maqad* (rectal prolapse), *Pyorrhoea*, *Ishal Safrawi*, *Ishal damwi*, *Qula* (stomatitis), *Surkh bada*, *Kasrate haiz* (menorrhagia), *Sailan-ur-rahman* (leucorrhoea), *Diarrhoea*, *Nakseer* (epistaxis). This review gives a keen view on its phytochemical studies, chemical constituent and pharmacological action and medicinal application of the drug.

Key words: *Punica granatum* Linn., Pharmacological activity, Hypoglycaemic, Unani Medicine.

INTRODUCTION

Gulnar is equated with sterile flowers of *Punica granatum* Linn. in Unani system of medicine.¹ Gulnar belongs to the family Punicaceae.^{1,2} It has been depicted in many illustrations dating from the time of *Egyptians*.³ Anar is one of the oldest drugs known. In *Ebers papyrus* of *Egypt* it is mentioned, written in about 1550 BC.⁴ The term punica is derived from Latin malum punicum meaning 'an apple' with many seeds or 'apple of carthage'.³ Gulnar which are sterile flowers of *Punica granatum* Linn. used as medicine and for ornamental purpose.^{3,5} *Gulnar* blooms thrice a year during March and April, July and August and mid January.⁵

SYNONYMS: *Punica nana* Linn.¹

SCIENTIFIC CLASSIFICATION⁶

Kingdom : Plantae
Phylum : Magnoliophyta
Class : Magnoliopsida
Order : Myrtales
Family : Punicaceae
Genus : *Punica*
Species : *granatum*

HABITAT AND DISTRIBUTION

Punica granatum Linn. is considered to be a native of Iran, Bangladesh, Baluchistan, found growing wild in the warm

valleys and outer hills of the Himalayas between 900 m and 1800 m and in salt range.^{6,7,8} Pomegranate is commonly found in tropics and subtropics.⁴ It is cultivated throughout India.^{7,8,9} It is cultivated as a commercial crop and also as an ornamental plant.¹⁰ It can be propagated through seeds cuttings.⁵

VERNACULAR NAMES

Greek: Roia, Roidia, Roidion;¹¹ Unani: Anar, Roomaan, Gulnaar, Gulnar farsi;^{12,13} Sidha: Maathulai;¹² Arabic: Rumman, Shajratur-rumman;^{11,14} Kashmiri: Dhawn, Dhaun;⁸ Bengali: Dalim, Dalimgachh;^{1,15,16} English: Pomegranate;^{3,7,17,18} Gujarati: Dalam;^{7,17,19} Hindi: Anar, Anar ke phar, Dhalim;^{7,10,14,17,20} Persian: Gulnar, Darakte-nar;^{8,9,11,14} Tamil: Madulai, Madalai, Madulam, Madulumgam, Mathulai;^{7,10,11} Telugu: Danimma, Dalimma, Dadimma, Dadimba;^{7,11,21,22} Urdu: Anar, Anar meetha;^{1,11} Uriya: Dalimbo;¹¹ Marathi: Dalimba;^{7,11} Sanskrit: Dadimah, Kuchaphala, Shukadana, Darimba, Darima;^{14,16,20} Ayurvedic: Daadima, Daadimba, Raktapushpa, Dantbijaa, Lohitpushpaka;¹² Malayalam: Matalam, Dadiman;^{7,21,22} Marathi: Daalimba, Dalmb;^{7,10} Panjabi: Anar, Daru, Jaman, Darim;^{7,9,11,14} Gujarati: Dadam, Gulnar, Daram, Dadur;^{9,14} Kanada: Dalimba, Daliombe, Dalimbe-gida, Dalimbe-kaye;^{1,20,22} Sindhi: Anar dakum;⁹ Daccan: Anar;¹¹ German: Granatbaum;¹¹ Brazil: Roma;¹¹ Burma: Salebin;¹¹ Chinese: An Shih Liu, Che Lieou, Shih Liu;¹¹ French: Balaustier.¹¹

Gulnar (*Punica granatum* Linn.) (Flower)

BOTANICAL DESCRIPTION

Punica granatum Linn. is a deciduous shrub or small glabrous tree of 6-8 metre height with pale brownish bark and small axillary terminal spines. The buds and young shoots are red^{5,10,11}.

Leaves: Opposite or sub-opposit, 2.5 to 6.3 cm. long, oblong-lanceolate, oblong elliptic or oblong-oblongeote, glabrous, entire minutely pellucid-punctate, shining above, bright green beneath, base narrowed into a very short petiole^{5,16};

Flowers: Flowers are bell shaped, 1.5-3.0 cm. high, 1.5-2.5 cm. Broad, mostly solitary, sometime 2-4 together, terminating, short shoots, sometimes apparently axillary, sessile or nearly so; Calyx tube campanulate, coriaceous, prolong above the ovary; ovary inferior^{1,5};

Fruits: Crowned by the somewhat tubular limb of the calyx, large globose, indehiscent, with a curvaceous rind; Pulp red and juicy, sometime white¹⁶;

Seeds: Angular, testa coriaceous.¹⁶

MAHIYAT (UNANI MORPHOLOGY)

It is a famous plant, which is found in common countries of Asia.^{23,24} It is buds of wild pomegranate, which is used as medicine. There are some plants which are Fruitless are known as *Gulnar*.^{25,26} Height of the plant is up to 20 feet. Its stem is thin. The bark of these plants is yellow or brown in colour. At one site its red flowers occur in a bunch of two flowers.²⁷ There is difference in between *Gulnar Farsi* and flower of Pomegranate. Unani physician said that there is similarity of function among *Gulnar Farsi* and Pomegranate.²³ On the basis of taste pomegranate are of three types *hulu* (sweet), *hamiz* (sour), and *maikhooosh* (sweet and sour).²⁶ Kandhari Anar from Afghanistan is most famous in world.²⁴ Kabuli pomegranate is best among all other countries. Best pomegranate is that whose seeds are bigger in size.²⁷

MIZAJ (TEMPERAMENT)

Sard (cold) 2⁰ and *Khushk* (dry) 2⁰ .^{1,25} ; *Sard* (cold) and *Khushk* (dry)^{23,26,28}

HASASE MUSTAMELA (PARTS USED)

Flowers,^{7,9,14} Pulp,^{10,17} Fruits,^{3,7,9,14} Fresh juice,¹⁷ Seed^{10,16,17} Rind,¹⁰ Leafs,^{13,14,16} Root Bark^{7,9,14}

AFA'AL (FUNCTION) AS PER UNANI LITERATURE

Flowers: *Qabiz* (astringent),^{3,23} *rade* (derivative)^{23,25} *mujaffif* (desiccative),²⁵ *mudammil* *qurooh*,²³ *daf-i-zaheer*

(antidysentery), *daf-i-ishal* (antidiarrhoeal),¹ *habis-i-dam* (haemostyptic),^{1,25} *musakkin-i-safra*.²⁶

Seeds: *Qabiz* (astringent), *mushtahi* (appetiser), *muqauwwi qalb* (heart tonic), *mukauwwi jigar* (liver tonic), *muqawwi meda* (gastric tonic), *mudire baul* (diuretic)²³

Bark of stem and root: *Qabiz* (astringent), strengthening gum, *qatile kirme shikam* (vermicidal), *muhallile warm*, *mujaffif* (desiccative), *mushil* (laxative),²³ antidysentric.¹

Rind: *Qabiz* (astringent), *muhallile warm*, *mujaffif* (desiccative), gum strengthening.²³

ESTEMAL (USES) AS PER UNANI LITERATURE

Flowers: *Zaheer* (dysentery),^{24,26} *nazf-ud-dam* (hematemesis)^{24,26} *sual* (cough),²³ *khurooje maqad* (rectal prolapse),^{24,26} *pyorrhoea*,^{23,25} *ishal safrawi*,^{24,25,26} *ishal damwi*,^{1,24,25,26} *qula* (stomatitis)^{23,24,25,26} *surkh bada*,²⁶ *kasrate haiz* (menorrhagia), *sailan-ur-raham* (leucorrhoea),²⁵ *diarrhoea*,²³ *nakseer* (epistaxis).²⁵

Leaves: *Ashoob-i-chashm* (conjunctivitis)²⁷

Seeds: *Pechish* (dysentery),²³ *khafqaan* (palpitation), *dard-i-seena* (chest pain), *zauf-i-meda*, *khansi* (cough), *qula* (stomatitis),²⁷ *matli* (nausea), *qai* (vomiting).²³

Stembark and rootbark: *Habbul qara* (tape worm).¹⁷

Rind: *Bawaseer* (hemorrhoid), *qula* (stomatitis), *ishal* (diarrhoea), *zaheer muzmin* (chronic dysentery), *khurooje maqad* (rectal prolaps), *sailan-u-raham* (leucorrhoea), *kasrat-i-haiz* (menorrhagia), *silsul baul* (dribbling of urine),²³ *khooni bawaseer* (bloody piles), *khansi* (cough)¹⁹.

AFA'AL (FUNCTION) AS PER OTHER LITERATURE

Fruits: Astringent, cooling,^{9,10} tonic,^{9,11} antilithic,²⁰ aphrodisiac,⁹ nutritive,²⁰ laxative, diuretic,^{9,10,11} appetiser.¹¹;

Seeds: Astringent, stomachic, demulcent, diuretics, cardiotonic.⁹

Leaves: Antifungal,^{10,13} CNS depressant, diuretic, hypotheric.¹⁰

Bark of stem and root: Astringent, ant-helminthic,^{7,9,16,22} strengthening gum,^{9,11} antifungal, cooling, febrifuge, vermicide,¹⁰ piles,¹¹ antibacterial.¹³;

Stem: Astringent, antihelminthic.⁷;

Rind : Gum Strengthening,²³ astringent,^{7,12} antidiarrhoeal,¹⁰ stomachic,^{10,12} antidysentric,¹⁰ digestive,^{10,12} cardiotonic.¹⁰ ;

Roots: Astringent, antihelminthic.⁷

ESTEMAL (USES) AS PER OTHER LITERATURE

Flowers: Leucorrhoea,²⁰ dysentery,¹⁰ haematuria, haemorrhoid,⁷ ,⁹ ulcer,^{9,10,11} hydrocele,^{9,11} diarrhoea,^{10,20} haemoptysis in tuberculosis, spermatorrhoea, threatened abortion,²⁰ pharyngitis,

conception, leucorrhoea,¹⁰ epistaxis,^{11,22,25} sore throat,^{11,19} sore eye, vomiting.^{11;}

Leaves: Stomatitis,¹² conjunctivitis,^{8,16} dysentery,^{16;}

Seeds: Sore throat,¹¹ vomiting,^{9,10,11} excessive thirst, hepatic disorder, splenic disorder,^{9,10} bronchitis, scabies, earache, sore eye,¹¹ decoction of seeds used for treatment of syphilis.^{15,22;}

Fruit: Jaundice,¹⁷ diarrhoea,^{15,16} dysentery,¹⁹ fever, sore throat, stomatitis, vomiting.^{11;}

Bark of stem and root: Bronchitis, piles, prolapsus ani,^{11;}

Rind: Diabetics,^{15,22} diarrhoea, dysentery,^{7,11} freckles, gonorrhoea, colitis, dyspepsia.⁹

MAZARRAT (TOXICITY)

Darde sar, Sudde paida karta hai.^{25,28}

The aqueous extract of fruit skin (rind) is neurotoxic and it is highly toxic, when given in a daily dose of 0.4 ml leads to mortality in all 6 male house sparrow in 72 hrs.^{5,9}

When pelletierine is given in excessive dose, it causes amblyopia, mydriasis, vomiting, diarrhoea, muscular weakness.⁹

MUSLEH (CORRECTIVES)

Kateera (*Sterculia urens* Linn.)^{1,25,28}

BADAL (SUBSTITUTES)

Anar ki kali or chhaal (flower bud or bark of *Punica granatum* Linn.),^{1,25} Jufte baloot (*Quercum indica* Roxb.)^{1,25,28}, Zeera (*Cuminum cyminum* Linn.).¹

TASTE: Tasteless¹

MIQDARE KHURAK (DOSE): 3-5 masha (gm),²⁵ 5-7 gm.¹ 7 masha²⁸

MURAKKABAT (COMPOUND FORMULATION)

*Qurse Tabasheer,*²⁹ *Sharbat-i-anar,*²⁶ *Qurse gulnar,*¹ *Jawarish anarain,* *Jawarish podeena,*²⁶ *Barood-i-rumman,*²⁷ *Kushta chandi,* *Kushta marjan,*¹⁹ *Majoone busud,* *Majoone kalan,* *Habbe narkachur,* *Safoofe Asl-us-soos,* *Safoofe kalan,* *Sunoone supari,* *Qurse ziabetus,* *Qurse kharbuja.*¹

CHEMICAL COMPOSITION

In various part of plant Malvidin pentose glucosides, tannin, ursolic acid.⁹

Flowers: Tannins, saponins, pelargonidin-3, 5-diglucoside,^{5,10} sistosterol,^{7,10}

ursolic acid,^{7,9,10} asiatic acid, maslinic acid,^{9,10} pelargonidin-3,^{5,9} 5-diglucoside,^{5,9,22} gallic acid,^{10,13} sitosterol- β -d-glucoside.¹⁰

Fruit: Pectin, vitamin c, delpidinidin, riboflavin, nicotinic acid, protein, digycoside, citric acid, malic acid,⁹ glutamine, aspartic acid,^{9,10} thiamine,^{9,20} citric acid,¹⁹ vitamin A, calcium, phosphorus, iron, potassium, sodium, oxalic acid, carbohydrate, tannins,²⁰ fluorides.¹⁰

Seeds: Malvidin pentose glucosides granatin A, granatin B, corilagin, strctinin, punicinic acid, nanodecanoic acid, tricosanoic acid, methylauric acid, delphinidin 3,5-diglucoside,¹⁰ Estrone, punicic acid.⁹

Leaves: Butalic acid, punicatolin, granatins,⁹ ellagitannins-granatins A&B, punicafolin.¹³

Stembark: Tannins,⁷ alkaloid (pelletierine, iso pelletierine, pseudo pelletierine, methyl- iso pelletierine, seldridine, methyl-pelletierine, N- methyl pelletierine, isoquercetin, butalic acid, gallic acid, D-mannitol).^{9,10,20}

Rootbark: Alkaloid (pelletierine, iso- pelletierine, pseudo iso methyl- pelletierine),^{8,9} punico-tanincacid.⁸

Roots: Tannins, alkaloids.²⁰

Stem: Carbohydrate, carotene, D-mannitol,⁸ tannins.²⁰

Rind: Ellagic acid,^{7,9} tannins,⁷ ellagitannins as granatin- β , punicalagin, ursolic acid, sistosterol.¹⁰

REPORTED PHARMACOLOGICAL ACTIVITY

Antidiabetic activity: Ethanol (50%) extract of the male abortive flowers, administered orally to normal, glucose-fed hyperglycaemic and alloxan-induced diabetic rats, produced significant blood glucose lowering effect.⁴

Antiulcer activity: Orally administered peel, rind and seed extract in a dose, peel (100 mg/kg) (group iv), rind (500 mg/kg) (group v) and seed (500mg/kg) (group vi) on gastric ulcer induced by pylorus ligation in diabetic rats, decreased the mucosal injury significantly at 6th day (last day) and showed antiulcer effect.³⁰

Antioxidant activity: Fruit juice exhibited a range anti-oxidant activity from 157.33 to 419.33 mmole/100ml, and of peel varied in different cultivars and ranged from 225.17 to 705.50 mmole/100gm.⁶² Methanol extract of fruit, at a concentration of 50.0 microliters, was active. Fermented juice and seed oil produced strong antioxidant activity close to that of butylated hydroanisole and the sinensis, and significantly great than that of red wine (*Vitis vinifera*) Flavonoids extracted from cold pressed seed oil produced 31-44 % inhibition of sheep cyclo-oxygenase and 69-81 % inhibition of soybean lipoxygenases. Flavonoids extracted from the fruit peel produced 21-30 % inhibition of soybean lipoxygenase though no significant inhibition of sheep cyclo-oxygenase.⁴

Allergenic activity: Fruit, taken orally by human adults, was active. A case was reported of tongue angioedema following ingestion of fruit. An IgE mediated mechanism could not be demonstrated.⁴

Anti-ascariasis activity: Ethanol (95%) extract of the epicarp was active on earth-worm. Paralysis occurred in 18 hours with a death rate of 50%.⁴

Anti-fertility activity: Fruit peel, in the ration of guinea pigs of both sexes at dose of 18.0 gm/kg and in the ration of female rates was active.⁴

Anti-inflammatory activity: Ethanol extract (80%) of dried fruit peel, administered by gastric intubation to male rats at a dose of 100.0 mg/kg, produced weak activity vs carrageenin induced pedal oedema. 23 % inhibition of edema was observed ethanol/water (1: 1) extract of areal parts, administered orally to rats at a dose of 0.125 mg/kg, inactive vs carrageenin induced pedal oedema. Animals were dosed 1 hour before carrageenin injection.⁴

Anti-mycobacterial activity: Ethanol (95%) extract of dried arial parts, at a concentration of 1:50 on agar plate, produced weak activity on mycobacterium tuberculosis.⁴

Intestinal antisecretory activity: Decoction of dried fruit peel, administered intragastrically to rats, was active vs MgSO₄ induced enterpooling. The ethanol (95 %) extract, at a dose of 500.0 mg/kg, was active vs MgSO₄ induced enterpooling.⁴

Antibacterial and antifungal activities: Methanolic extract of *Punica granatum* peel had antibacterial activity against *S. aureus* and *S. epidermidis*. Only at concentration of 8 mg/ml and 12 mg/ml it was effective against *L. acidophilus*, *S. mutans* and *S. salivarius*.³¹

Anti Dental plaque: Hydro-alcoholic extract from *Punica granatum* (pomegranate) fruits was very effective against dental plaque, presented also an antibacterial activity against selected microorganisms.³²

CONCLUSION

Various phytochemical and pharmacological studies have been conducted on different parts of *Punica granatum*. The present literature supports the potential of *Punica granatum* as a medicinal/therapeutic plant. In view of the nature of the plant and immense scope, owing to its classical indications, more research can be done to investigate the unexplored and unexploited potential of this plant.

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