Punica grantum

TAXONOMICAL CLASSIFICATION:[1]

- *Kingdom: Plantae*
- *Phylum: Spermatophyta*
- *Subphylum: Angiospermae*
- *Class: Dicotyledonae*
- *Order: Myrtales*
- *Family: Punicaceae*
- *Genus: Punica*
- *Species: Punica granatum*

INTRODUCTION:[2,3]

Pomegranate is a small tree height measuring from five to eight meters, it is important endemic plants of Iran grows in semiarid and arid regions as it has the ability to adapt to adverse ecological condition. It can be divided in to several anatomical compartments including seed, juice, peel, leaf, flower, bark and root each of them contains many pharmacological and toxicological activities. In various researches it has been found that pomegranate has two main species *P. protopunica* Balf and *P. granatum* L Pomegranate tree has twisted branches with thorns and red-gray bark, leaves are mostly opposite oblong, deciduous, shiny and stiff. Flower blossom in the month of May to July at the end of the branches. Fruit is round in shape with yellow and orange in color and in berry shape. Fruit is divided internally in to 7-15 cavities embedded with seeds having sweet and sour pulp, transparent and juicy. Not only for health issue even this plant and its parts such as fruits and flower are used for decoration of tables and dishes purpose also. There are three types of anar according to taste sweet anar, sour anar, and combination of both sweet and sour. About 50% of the total fruit weight corresponds to the peel, which is an important source of bioactive compounds such as phenolics, flavonoids, ellagitannins, and proanthocyanidin compounds, minerals, mainly potassium, nitrogen, calcium, phosphorus, magnesium, and sodium, and complex polysaccharides. The edible part of the pomegranate fruit (50%) consists of 40% arils and 10% seeds.

Arils contain 85% water, 10% total sugars, mainly fructose and glucose, and 1.5% pectin, organic acid, such as ascorbic acid, citric acid, and malic acid, and bioactive compounds such as phenolics and flavonoids, principally anthocyanins. The seed cover of the fruit contains delphinidin-3-glucoside, cyanidin-3-glucoside, delphinidin3,5-diglucoside, cyanidin-3,5-diglucoside, pelargonidin-3,5- diglucoside, and pelargonidin-3-glucoside with delphinidin3,5-diglucoside being the main anthocyanin in pomegranate juice. 12–20% of total seed weight of pomegranate comprises seed oil and is self-possessed with more than 70% of the conjugated linolenic acids. The fatty acid component of pomegranate seed oil comprises over 95% of the oil, of which 99% is triacylglycerols. Minor components of the oil include sterols, steroids, and a key component of mammalian myelin sheaths, cerebroside. Interestingly, punicic acid, which is a conjugated isomer unique to pomegranate oil, constitutes 70–76% of the seed oil. Phenolic compounds, together with flavonoids, anthocyanins, and tannins, are the main group of antioxidant phytochemicals that are important due to their biological and free radical scavenging activities. Phenolic acids, flavonoids, and tannins are present in different parts of pomegranate fruit and this may be one of the reasons why many of the studies demonstrated that combinations of pomegranate extracts from different parts of the fruit were more effective than a single extract.

PROPERTIES AND USES: [4,5]

- In Heart Problems
- In Stomach Disorder
- In Dental Care
- In Cancer
- In Osteoarthritis
- In Diabetes
- Anemia
- Antioxidant activity
- Gastroprotective
- Hypoglycemic

- Neuroprotective
- Anti-inflammatory
- Antimicrobial
- Antifungal
- Inhibits methicillin-resistant S. aureus
- Antiplasmodial
- Anthelmintic
- Cardiovascular protection
- Antidiarrheal
- Inhibits microbial adherence
- Anti-resorptive and bone building dietary supplements
- Anti-allergy
- anti-wrinkle and anti-aging
- Angiogenic agents
- treating rhinitis and sinusitis
- **SIDE EFFECTS OF EXCESS CONSUMPTION:**[6]

When taken by mouth: Pomegranate juice is **LIKELY SAFE** for most people when taken by mouth. Most people do not experience side effects. Some people can have allergic reactions to pomegranate fruit. Pomegranate extract is **POSSIBLY SAFE** when taken by mouth or applied to the skin. Some people have experienced sensitivity to pomegranate extract. Symptoms of sensitivity include itching, swelling, runny nose, and difficulty breathing.

The root, stem, or peel of pomegranate is **POSSIBLY UNSAFE** when taken by mouth in large amounts. The root, stem, and peel contain poisons.

When applied to the skin: Pomegranate extract is **POSSIBLY SAFE** when applied to the skin. Some people have experienced sensitivity to pomegranate extract. Symptoms of sensitivity include itching, swelling, runny nose, and difficulty breathing.

DOSAGE: [6]

ADULTS

BY MOUTH:

- **For high blood pressure**: 43-330 mL of pomegranate juice has been used daily for up to 18 months.

RESEARCH:

1. Antihemolytic and antioxidant activities of pomegranate fruit peel were investigated employing different in vitro assay systems. The phytochemical screening reveals the presence of flavanoids in the crude extract. The total amount of phenolic compounds in flavanoid extract was determined as catechol equivalents. The extract showed good Fe2+ chelating ability, EC50 was 643 µg/ ml. The extract also exhibited high antioxidant activity (88%) against hemoglobin induced linoleic acid system and also capable of scavenging hydrogen peroxide in a concentration dependent manner. In addition, the extracts also showed higher antihemolytic activity with increase in concentration. So we can conclude that the in vitro study emphasized PPE (Pomegranate peel extract) effective antioxidant and scavenging activities which may be due to its phenolics and flavanoids contents. [7]
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3. Phytoconstituents and free radical scavenging activity of P. granatum extract were performed. Ethanolic and aqueous extract of fruit and peel of the plant was used for in vitro clotlysis activity using streptokinase (SK) as standard. In a series of pre-weighed eppendorf tubes, equal volume of venous blood was collected and serum was removed and the tubes were weighed. The tubes containing clot were incubated with fruit, peel extract (100 ug/ml), and SK individually at 37°C for 60 minutes. After incubation, fluid obtained was removed, and tubes were again weighed to observe the difference in weight after clot disruption. The percent of clot lysis was determined.Free radical scavenging activity of the extracts was increased in a dose-dependent manner. Of the extracts, ethanolic extract showed maximum activity as compared with aqueous extract, whereas the ascorbic acid exerted maximum activity as compared with the extracts. Maximum thrombolytic activity (59%) was observed with ethanolic extract of peel of the fruit. The present study concluded that the aqueous and ethanolic extracts of P. granatum fruit and peel possess thrombolytic activity.[9]

PRECAUTIONS & WARNINGS: [6]

Pregnancy and breast-feeding: Pomegranate juice is **POSSIBLY SAFE** for pregnant and breast-feeding women. But there is not enough reliable information about the safety of using other forms of pomegranate, such as pomegranate extract. If you use pomegranate during pregnancy or breast-feeding, stick with the juice.

Low blood pressure: Drinking pomegranate juice can slightly lower blood pressure. Drinking pomegranate juice might increase the risk of blood pressure dropping too low in people who already have low blood pressure.

Allergies to plants: People with plant allergies seem to be more likely to have an allergic reaction to pomegranate.

Surgery: Pomegranate might affect blood pressure. This might interfere with blood pressure control during and after surgery. Stop taking pomegranate at least 2 weeks before a scheduled surgery.

INTRACTIONS:[6]

Moderate Interaction

Be cautious with this combination

- **Medications for high blood pressure (ACE inhibitors) interacts with POMEGRANATE**

  Pomegranate juice seems to decrease blood pressure. Taking pomegranate juice along with medications for high blood pressure might cause your blood pressure to be too low.
  Some medications for high blood pressure include captopril (Capoten), enalapril (Vasotec), lisinopril (Prinivil, Zestril), ramipril (Altace), and others.

- **Medications for high blood pressure (Antihypertensive drugs) interacts with POMEGRANATE**

  Pomegranate seems to decrease blood pressure. Taking pomegranate along with medications for high blood pressure might cause your blood pressure to go too low.
  Some medications for high blood pressure include captopril (Capoten), enalapril (Vasotec), losartan

(Cozaar), valsartan (Diovan), diltiazem (Cardizem), Amlodipine (Norvasc), hydrochlorothiazide (HydroDIURIL), furosemide (Lasix), and many others.

- **Medications changed by the liver (Cytochrome P450 2D6 (CYP2D6) substrates) interacts with POMEGRANATE**

  Some medications are changed and broken down by the liver. Pomegranate might decrease how quickly the liver breaks down some medications. Taking pomegranate along with some medications that are changed by the liver can increase the effects and side effects of your medication. Before taking pomegranate talk to your healthcare provider if you take any medications that are changed by the liver.
  Some medications that are changed by the liver include amitriptyline (Elavil), codeine, desipramine (Norpramin), flecainide (Tambocor), fluoxetine (Prozac), ondansetron (Zofran), tramadol (Ultram), and others.

- **Rosuvastatin (Crestor) interacts with POMEGRANATE**

  Rosuvastatin (Crestor) is broken down by the body in the liver. Drinking pomegranate juice might decrease how quickly the liver breaks down rosuvastatin (Crestor). This might increase the effects and side effects of rosuvastatin (Crestor).

Minor Interaction

Be watchful with this combination

- **Medications changed by the liver (Cytochrome P450 3A4 (CYP3A4) substrates) interacts with POMEGRANATE**

  There has been some concern that drinking pomegranate juice might decrease how quickly the liver breaks down some medications. However, scientific research shows that drinking pomegranate juice probably does not cause an important interaction with medications. Until more is known, talk to your healthcare provider if you are taking any medications that are changed by the liver.
  Some medications changed by the liver include amlodipine (Norvasc), diltiazem (Cardizem), verapamil (Verelan, Calan, others), indinavir (Crixivan), nelfinavir (Viracept), ritonavir (Norvir),

saquinavir (Invirase), alfentanil (Alfenta), fentanyl (Sublimaze), midazolam (Versed), ondansetron (Zofran), propranolol (Inderal), and many others.

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