

## *Punica granatum* - A 'Swiss Army Knife' in the field of ethnomedicines

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*Punica granatum* (Family: *Lythraceae*) commonly known as **pomegranate** is native to Iran and now widely cultivated throughout world including india. This is drought-tolerant. The name "pomegranate" derives from Latin *pōmum* "apple" and *grānātus* "seeded". Their edible fruit is a berry, with a rounded hexagonal shape, and has thick reddish skin and around 600 seeds. Each seed has a surrounding water-laden pulp-the edible aril-ranging in color from white to deep red or purple. The seeds are embedded in a white, spongy, astringent pulp. Their nutritional value as per 100g are Energy 83kcal, Carbohydrates 18.7g, Sugars 13.7g, Dietary fiber 4.0g, Fat 1.2g, Protein 1.7g, Thiamine (vit. B<sub>1</sub>) 0.07mg (6%), Riboflavin (vit. B<sub>2</sub>) 0.05mg (4%), Niacin (vit. B<sub>3</sub>) 0.29 mg (2%), Pantothenic acid (B<sub>5</sub>) 0.38mg (8%), Vitamin B<sub>6</sub> 0.08mg (6%), Folate (vit. B<sub>9</sub>) 38μg (10%), Vitamin C 10mg (12%), Calcium 10mg (1%), Iron 0.30mg (2%), Magnesium 12mg (3%), Phosphorus 36mg (5%), Potassium 236mg (5%), Zinc 0.35mg (4%)(Source: [USDA Nutrient Database](#)).

In our ancient Ayurveda system of medicine, the pomegranate has extensively been used as a source of traditional remedies for thousands of years against diarrhea, dysentery and intestinal parasites. The seeds and juice are considered a tonic for the heart and throat, and classified as a bitter-astringent (*pitta* or fire) component and considered a healthful counterbalance to a diet high in sweet-fatty (*kapha* or earth) components. Pomegranate juice (of specific fruit strains) is also used as eyedrops as it is believed to slow the development of cataracts. Pomegranate aril juice provides about 16% of an adult's daily vitamin C requirement per 100 ml serving, and is a good source of vitamin B<sub>5</sub> (pantothenic acid), potassium and polyphenols, such as tannins and flavonoids. The most abundant polyphenols in pomegranate juice are the hydrolyzable tannins called ellagitannins formed when ellagic acid binds with a carbohydrate. Punicalagins are tannins with free-radical scavenging properties in laboratory experiments and with potential human effects. Punicalagins are absorbed into the human body and may have dietary value as antioxidants. During intestinal metabolism by bacteria, ellagitannins and punicalagins are converted to urolithins which have unknown biological activity in vivo.

Dr. A.E. Dujally scientist of Queen Marget University isolates Punicalagins from pomegranate seed, pulp, etc. Punicalagins is very effective in the treatment of infertility, heart disease, cancer, high blood pressure and several others. **Their isolation is a mile stone of plant medicine after isolation of aspirin** (also known as acetylsalicylic acid or ASA) from willow plant. Aspirin also has analgesic, anti-inflammatory, antiplatelet [prevent clotting diseases (such as heart attacks and strokes)] and antipyretic properties. It is also effective against 8-OXO-DG compound, which is related to aging.

**Punicalagins** are tannins, large polyphenol compounds which are isomers of 2,3-(S)-hexahydroxydiphenoyl-4,6-(S,S)-gallagyl-D-glucose, hydrolysable tannins with a Molecular formula C<sub>48</sub>H<sub>28</sub>O<sub>30</sub> and molecular weight of 1084 g/mol. They are found in forms alpha and beta in pomegranates. Punicalagins are also found to be the major component responsible for pomegranate juice's antioxidant and health benefits. Punicalagins are water soluble and have high bioavailability. They are known to hydrolyze into smaller polyphenols such as ellagic acid in vivo where one potential mechanism is hydrolysis across the mitochondrial membrane of cultured human colon cells.

Thus we can say isolation of Punicalagins from pomegranate is an unusual achievement in the history of plant producing compounds which are beneficial for mankind.

De facto this achievement also creates a detail attention for wide, through and serious screening, researches on our ancient, prestigious natural plant resources.