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### Medicinal Uses of *Punica granatum* and Its Health Benefits

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Pomegranate has been used for thousands of years to cure a wide range of diseases across different cultures and civilizations. It has great nutritional values and numerous health benefits. Pomegranates as a Treatment for Cancer, Osteoarthritis and Other Diseases. The pomegranate has been used in natural and holistic medicine to treat sore throats, coughs, urinary infections, digestive disorders, skin disorders, arthritis, and to expel tapeworms. However, modern research suggests that pomegranates might be useful in treating such serious conditions as prostate cancer, skin cancer, osteoarthritis, and diabetes. Studies also show that pomegranate seeds might help rid the digestive system of fats. Clinical research shows that pomegranates, when part of a healthy diet, might help prevent heart disease, heart attacks and strokes. This is because pomegranates have the potential to thin the blood, increase blood flow to the heart, reduce blood pressure, reduce plaque in the arteries, and reduce bad cholesterol while increasing good cholesterol. A decoction of seed is used to treat syphilis. Juice used to treat jaundice and diarrhoea. Juice of flower is used to treat nose bleeds. The fruit pulp and the seed are stomachic. Dried, pulverized flower buds are employed as a remedy for bronchitis

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**Keyword:** - Pomegranate, Treatment for Cancer, Pomegranate, Prevent Heart Disease, Jaundice and Diarrhoea

#### 1. Introduction

In preliminary laboratory research and clinical trials, juice of the pomegranate may be effective in reducing heart disease risk factors, including LDL oxidation, macrophage oxidative status, and foam cell formation. In mice, "oxidation of LDL by peritoneal macrophages was reduced by up to 90% after pomegranate juice consumption. In December, 2010 scientists have identified components in pomegranate juice that inhibit the movement of cancer cells. Researchers at the University of California have found that these components also weaken cancer cells' attraction to a chemical signal that promotes the metastasis of prostate cancer to the bone and pomegranate juice helps fight prostate cancer. In

the ancient Ayurveda system of medicine, the pomegranate has extensively been used as a source of traditional remedies for thousands of years. The rind of the fruit and the bark of the pomegranate tree is used as a traditional remedy against diarrhea, dysentery and intestinal parasites. The seeds and juice are considered a tonic for the heart, throat, eyes and for a variety of purposes, such as stopping nose bleeds and gum bleeds, toning skin, firming-up sagging breasts and treating hemorrhoids. In the past decade, numerous studies on the antioxidant, anti-carcinogenic, and anti-inflammatory properties of pomegranate constituents have been published, focusing on treatment and prevention of cancer, cardiovascular disease, diabetes, dental

conditions, erectile dysfunction, bacterial infections and antibiotic resistance, and ultraviolet radiation-induced skin damage. Other potential applications include infant brain ischemia, male infertility, Alzheimer's disease, arthritis, and obesity. In treating diarrhea, dysentery and intestinal parasites. Pomegranate is well known for antioxidant properties. It helps in preventing the formation of skin cancer by reducing the frequency of lesions. It provides relief from minor skin irritations, such as dry skin, eczema and psoriasis.

### 1.1 Biological Sources

- Botanical Name : *Punica granatum*
- Family Name : Puniaceae
- Common Name : Pomegranate, Anar
- Part Used : Seeds, flowers



Fig1: *Punica granatum*

### 1.2 Food Value

Food Value, Minerals and Vitamins per 100 grams of edible portion

- Moisture - 78.0%
- Calcium - 10 mg
- Protein - 1.6%
- Phosphorus - 70 mg
- Fat - 0.1%
- Iron - 0.3 mg
- Minerals - 0.7%
- Vitamin C - 16 mg
- Carbohydrates - 14.5%
- Small amount of Vitamin B Complex
- Fibre - 5.1%
- Calorific Value – 65

### 1.3 Chemical constituents:

Icosanoic, Linolenic (Conjugated, Linolenic (Alpha, Oleic, Palmitic-, Punicic, Stearic acid, citric acid ,Malic acid was the second most abundant. Phenolic compounds like gallic acid, protocatechuic acid, chlorogenic acid, caffeic acid, ferulic acid, o – and p -coumaric acids, catechin, phloridzin and quercetin.

### 1.4 Common Name:

Hindi: Anar  
English: Pomegranate  
Latin: *Punica granatum*  
Sanskrit: Dadimah  
Marathi: Dalimba

### 1.5 Traditional Uses Of Pomegranates

**a. Heart Problems:** Frequent intake of pomegranate juice can maintain good flow of the blood in the body. Along with this, it decreases the risk of heart attack and heart strokes.

**b. Stomach Disorder:** Pomegranates peel, bark and leaves are used to calm the stomach disorder or diarrhea triggered due to any kind of digestive problems. Drinking tea made from the leaves of this fruit helps in curing digestive problems. Pomegranate juice is also used for handling problems of dysentery and cholera.

**c. Dental Care:** The best benefit of pomegranate is that its juice, along with its antibacterial and

antiviral properties, helps to reduce the effects of dental plaque.

**d. Cancer:** Pomegranates consist of advanced level of antioxidants called flavonoids. These flavonoids are thought to be effective in counteracting various cancer radicals. The individuals that face high risk of prostate and breast cancer should start drinking the juice of this fruit, as this will help them to reduce further risk of developing cancer. Regular consumption of pomegranates can reduce the PSA levels in the body and helps to fight the existing cancer cells in the body.

**e. Osteoarthritis:** Pomegranate minimizes the illness triggered in various forms, like atherosclerosis and osteoarthritis. The loss that is triggered due to the thickening and solidifying of the arterial walls and in cartilage and joints can be cured by consuming this fruit. Also, pomegranate is capable of preventing the creation of minerals that are liable for breaking down the connective tissues.

**f. Diabetes:** Consuming of pomegranate fruit juice by a diabetic patient can prevent coronary illnesses. Along with this, there is a slowdown in solidifying of the bloodstream, which can fuel non-occurrence of various heart diseases.

**g. Anemia:** Healthy blood flow can be maintained in the body by consuming this fruit in any form. Pomegranate seed extract supplies iron to blood and thus, help to decrease the anemic symptoms including fatigue, wooziness and weakness and hear loss.

### 1.6 Other Advantageous Forms of Pomegranate

With the passage of time, more and more people have started acknowledging the importance of consuming pomegranates. There are other advantages too, like pomegranate reduces the likelihood of having premature infants and it is also beneficial for the expected mothers to avoid having low weight infants during birth. Pomegranate seed extract also reduces the

likelihood of creating Alzheimer's disease among the elderly. It helps controlling aging issues like wrinkles and thus, facilitates youthful and glowing skin. Other than this, it allows a woman to overcome from her depression interval, especially from the menopause period. The pomegranate fruit juice is also known to be very helpful in treating issues of erectile dysfunctions. It is a good natural aphrodisiac and improves sperm count and semen quality. The astringent features of the flower juice, rind and tree bark are considered valuable for a wide range of purposes, such as stopping nose bleeds and gum bleeds, toning skin (after mixing with mustard oil) firming-up sagging breasts and treating hemorrhoid. Pomegranate seed (of specific fruit strains) is also used as eye drops as it is believed to slow the development of cataracts. Pomegranate is used as a gargle for a sore throat, and it is applied to the epidermis to cure hemorrhoid flare-ups. It cleanses and clarifies oral cavity, throat, esophagus stomach and chest.

### 1.7 Health Benefits of Pomegranate

#### 1.7.1 Free radicals:

Pomegranates are a rich source of antioxidants that helps to protect our body's cells from free radicals, which cause premature aging. Free radicals are formed due to exposure to the sun and harmful toxins from the environment.

#### 1.7.2 Pomegranate is natural blood thinners:

Prevents blood clots in the heart and arteries, also urinary retention. The seeds prevent your blood platelets from coagulating and forming clots.

#### 1.7.3 Arthritis prevention:

Pomegranate can reduce the damage on the cartilage for those hit with arthritis. This fruit has the ability to lessen the inflammation and fights the enzymes that destroy the cartilage.

#### 1.7.4 Help in erectile dysfunction:

Pomegranate juice can improve erectile dysfunction only moderately.

### 1.7.5 Prostrate cancer and heart diseases:

Two separate studies claim that pomegranate juice helps fight prostate cancer. In one lab experiment, the juices "slowed the growth of the cultured cancer cells and promoted cell death". In the second experiment, pomegranate juice improved the condition of the blood, hence improving the health of individuals down with cardiovascular diseases.

### 1.7.6 Prevention of atherosclerosis:

Pomegranates prevent the hardening of the artery walls with excess fat, leaving your arteries fat free and pumping with antioxidants.

## 1.8 Medicinal Properties of Pomegranates

The word "Pomegranate" (*Punica granatum*) comes from the Latin for "fruit of many seeds." In folk medicine, the fruit's astringent properties have been used to treat various ailments (cuts, sore throats, tapeworms, dysentery, and gum disease). Pomegranate juice is marketed in the United States as a major source of antioxidant nutrients that protect against heart disease and other ailments. Recent research has focused on its potential use as a treatment for cardiovascular disease, diabetes, and various forms of cancer. The author examines those properties of the pomegranate, as well as its history and nutritional and chemical makeup. Pomegranates are believed to be native to the areas from eastern Iran through northern India, says the author. More than a dozen cultivars of the fruit ("Wonderful" being the leading commercial cultivar in the United States) have been grown commercially in California's San Joaquin Valley since its introduction by Spanish settlers in the late 18th century. Pomegranates are a good source of vitamin C, providing between 10-20% of the recommended daily allowance according to one source<sup>1</sup> and up to 40% according to another. The potent antioxidant properties of the fruit have been attributed to its high content of soluble polyphenols. When tested in vitro on normal and colon-cancer cell lines, the juice was found to have superior antioxidant, antiproliferative, and

proapoptotic effects compared with single purified active ingredients, probably the result of synergistic actions among the fruit's multiple compounds. Studies have shown that the antioxidant activity of the pomegranate flowers yielded activity two to three times the antioxidant potency of tea or red wine. The author notes research suggesting that pomegranate juice may be cardioprotective, reducing risk factors (such as cholesterol accumulation, foam-cell formation in macrophages, and oxidized low-density lipoprotein [LDL]) without affecting native LDL. Cited by the author is an Israeli study in which 10 patients with carotid artery stenosis (advanced plaque build-up in the arteries) drank pomegranate juice and experienced reduced blood pressure, LDL oxidation, and progression of carotid lesions at 1-year and 3-year study intervals. In a randomized, double-blinded, placebo-controlled study at the Preventive Medicine Research Institute in Sausalito, CA, pomegranate juice drinkers with coronary artery disease had a 17% improvement in blood flow compared with an 18% worsening in the control group. The study team concluded that the antioxidants in the juice may help prevent the formation of fatty deposits on artery walls. In studies of the fruit's anticancer effects, pomegranate fruit extract (PFE) has been found to be chemopreventive in mouse mammary organ culture and in human breast cancer cells in vitro. In another study cited by the author, researchers at the University of Wisconsin in Madison found that PFE significantly reduced serum prostate-specific antigen levels and inhibited proliferation of aggressive human prostate cancer cells in athymic mice. Pomegranate extracts have exerted antiproliferative, antiestrogenic, and proapoptotic actions on leukemia cells as well as breast- and prostate-cancer cells. Results of studies with diabetic patients have shown that supplementing the diet with pomegranate juice had beneficial antioxidant effects on macrophages, implying that it could reduce the development of atherosclerosis. Australian researchers found that pomegranate flower extract reduced factors (hyperglycemia, hyperlipidemia, and a fatty heart) that can result in increased cardiac-

impairing fibrosis in patients with type 2 diabetes. Other studies have shown the benefits of pomegranate in promoting neurologic health, maintaining joint integrity and function, exhibiting estrogenic properties, blocking herpes simplex virus replication and adsorption, enhancing immune function, treating periodontal disease, enhancing the activity of antibiotics used to treat methicillin-resistant and methicillin-sensitive *Staphylococcus aureus* infections, and preventing smooth muscle dysfunction and fibrosis in erectile dysfunction. The author also mentions other uses of the fruit. In Ayurvedic medicine, the astringent properties of pomegranates are linked with bone and cartilage build-up; in the cosmetic arena, fruit-peel extract has been shown to stimulate a type of procollagen synthesis and inhibit a dermal degeneration process. The antioxidant, immune-boosting, and anticarcinogenic properties of the pomegranate, says the author, offers multiple potential medical applications.

### 1.9 Medicinal Benefits

Pomegranate is a poly-vitamin, a unique fruit plant producing a wide spectrum of biologically active substances especially important in our present-day polluted environment. It helps in preventing the harmful effects of radioactive substances by producing biologically active substances. Russians, after the deadly Chernobyl tragedy, used pomegranates to reduce the effect of radioactive substances. In order to maintain the health and energy levels of astronauts, submariners and coal miners, they often consume pomegranate juice regularly. Pomegranate is loaded with tannins, anthocyanins, polyphenolics and antioxidant vitamins, A, E and C, all of which have a health effect on the body. These elements work together to benefit the arteries, plus it keeps the cardiovascular system healthy which is the chief health benefit of Pomegranate. It has also been found to increase levels of nitric oxide, which improve blood flow to the heart, reduce arterial plaque, reduce systolic blood pressure and help in curing erectile dysfunction. Other benefits include preventing premature aging, stroke, arthritis, Alzheimer's and even

cancer. The juice of the red pomegranate has received attention for its rich flavor and health-boosting properties. If you cut a pomegranate open, you will see the many tiny pomegranate "arils" or seeds that are contained inside. The juice comes from the crushed seeds. Pomegranate juice has been shown to contain more antioxidants than most fruit juices, red wine or green tea, according to Health Castle.

### 1.10 Antimicrobial Properties

Drinking pomegranate juice has been shown to have antimicrobial properties against harmful bacteria that can exist in the stomach, such as *Escherichia Coli* (e. Coli) or *Bacillus subtilis*, both of which can cause painful infections and serious stomach conditions.

### 1.11 Fighting Cancer

Pomegranate contains a number of beneficial antioxidants, including polyphenols, tannins and anthocyanins. Antioxidants protect against free radicals, which are by-products of cell oxidization. Free radicals are associated with causing a number of health problems, including breast, prostate and lung cancers. Drinking pomegranate juice has been shown to shrink prostate tumors in mice, and this could be due to the fact that antioxidants contained within pomegranate juice help to fight against free radical damage. This also boosts immunity, which helps to lower the risk of cancer incidence.

### 1.12 Essential Vitamins and Minerals

Pomegranate juice is high in a number of vitamins and minerals, including 40 percent of the recommended daily allowance of Vitamin C per serving. Other essential vitamins and minerals include Vitamins A and E and folic acid. Meeting daily health requirements helps to enhance health and boost immunity.

### 1.13 Protects against Arthritis

Pomegranate juice contains an enzyme inhibitor that prevents enzymes from damaging cartilage in the body. This benefit helps to prevent the onset of or even symptoms associated with osteoarthritis.

#### 1.14 Blood Thinner

Drinking pomegranate juice has been shown to act as a natural blood thinner. This helps to increase the flow of blood to the heart while also reducing arterial plaque. While pomegranate juice alone would not act as a strong enough blood thinner on its own in those with heart disease, the juice can still have a beneficial effect on the heart. Pomegranate is a tree. Various parts of the tree and fruit are used to make medicine.

Pomegranate is used for many conditions, but so far, there isn't enough scientific evidence to rate pomegranate as effective for any of them. We do know, though, that pomegranate does not seem to be effective for reducing the symptoms of chronic obstructive (COPD) or improving breathing in people with this condition. Pomegranate is used for conditions of the heart and blood vessels, including high blood pressure, congestive heart failure (CHF), heart attack, "hardening of the arteries" (atherosclerosis), and high cholesterol. It is also used for conditions of the digestive tract, including diarrhea, dysentery, and tapeworm and other intestinal parasites.

Some people use pomegranate for flu, swelling of the lining of the mouth (stomatitis), gum disease, erectile dysfunction (ED), diabetes and a complication called acidosis, bleeding, and HIV disease. It is also used for preventing prostate cancer, obesity, and weight loss. Some women use pomegranate to cause an abortion. Pomegranate is used as a gargle for sore throat, and it is applied to the skin to treat hemorrhoids. Pomegranate (*Punica granatum*) is unique among plants. The only other plant that is closely related is a small tree that grows only on an island in Yemen. Pomegranate has been used for thousands of years to treat a wide variety of diseases. It is in Greek, Hebrew, Buddhist, Islamic, and Christian mythology and writings. It is described in records dating from around 1500 BC as a treatment for tapeworm and other parasites.

#### 1.15 Medicinal Uses of *Punica granatum* (Pomegranate)

Pomegranate fruit juice is known as a delicacy and is made into excellent sherbet with the addition of water, sugar and taken internally, and some people use it in preparing ice-creams, jellies and marmalades. Such juice of pomegranate fruits possesses diuretic, cooling effect, glucose, fructose, tannins, oxalic acid, and reduces thirst in cases of fevers, supplies the required minerals and helps the liver to preserve vitamin A. from the food, increases the body's resistance to T.B infection, and acts as a tonic for heart and kidney. According to Indian Herbal System, all parts of pomegranate including roots, leaves, flowers, rind, seeds and the reddish brown bark are used medicinally. Pomegranate bark and root contains several alkaloids including isopelletierine that fights against tapeworms. Pomegranate bark, leaves, immature fruit and fruit rind extracts is given to combat diarrhea, dysentery and hemorrhages, whilst powdered flower buds acts as a remedy for nose bleeding.

- For bleeding piles; the bark decoction is very effective, and if combined with Holarrhena's bark with a sip of honey it treats blood motions.
- For threatened abortion; pomegranate leaves, sandal wood powder, curd and a sip of honey are useful.
- For gum bleeding and bleeding of the teeth; the fruit rind powder mixed with black pepper, common salt, and applied. Such preparation whitens teeth, strengthens gum and said to prevent pyorrhea.
- For urinary calculus; a teaspoonful of ground seeds along with a cup of gram soup taken internally
- For diarrhea, dysentery, nose bleeding, prolapsed rectum, leucorrhea, etc.; powdered dried rind

with fenugreek decoction and a sip of honey are beneficial. The flower bud can also be snuffed in case nose bleeding.

- For conjunctivitis; a paste of the leaves is applied on the red part of the eye. This is also beneficial in healing scabies, eczema, itchiness and ringworm.
- It has immuno-stimulatory, anti-oxidant, anti-inflammatory anti-diabetic and anticancer. It is widely used in treating certain types of cancer including leukemia, breast, prostate and colon cancer, dysentery, diarrhea, excessive bleeding, intestinal worms and parasites.

### 1.16 Recent Research

New therapies for preventing cancer may be on their way as scientists have identified components in pomegranate juice that inhibit the movement of cancer cells. Researchers at the University of California have found that these components also weaken cancer cells attraction to a chemical signal that promotes the metastasis of prostate cancer to the bone. The research could lead to new therapies for preventing cancer metastasis. Manuela Martins-Green applied pomegranate juice on laboratory-cultured prostate cancer cells that were resistant to testosterone. The researchers found that the pomegranate juice-treated tumour cells that had not died with the treatment showed increased cell adhesion and decreased cell migration.

### 2. Conclusion

*Punica granatum* has been claimed in traditional literature to be valuable against a wide variety of diseases, such as kidney stone, bleeding of kidney, irritable condition of bladder inflammation, painful urination, burning sensation, problem in urine discharge<sup>1</sup>. Flowers are used in diarrhea, dysentery, hyperacidity, cardiogenic, dental disorders, anemia, piles, sterility and cough. The biological screening of *Punica granatum* extracts and compound have shown antioxidant, antiperoxidative, antibacterial, inflammation, and antitumor, hepatoprotective,

antiarthrogenic, and antidiarrhoeal. According to recent reports, the *Punica granatum* is rich in polyphenols, including mainly ellagitannins, gallotannins, tannin metabolites anthocyanins, punicalagin D, punicalin, punicalagin and 2-O-galloylpunicalin. Despite limited research data, manufacturers and marketers of pomegranate juice have liberally used evolving research results for product promotion, especially for putative antioxidant health benefits.

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