

Impressive New Findings:

How Pomegranates May Protect Against Heart Disease, Stroke, Prostate Cancer and More

Although pomegranates have been cultivated for thousands of years, the health-promoting properties of this “superfruit” have only recently come to the attention of the American public. Pomegranates grow on shrubs or small trees, and are believed to be native to the Middle East and India.¹ The reddish-colored pomegranate fruit is one of the seven food staples of the land of Israel mentioned in the Old Testament.

Recent published research has focused on pomegranate’s ability to **enhance the immune system** and its potential benefits for helping **prevent and treat cardiovascular disease, diabetes,** and various forms of **cancer.**¹ Natural compounds in pomegranates may even thwart osteoarthritis, according to new findings published in *The Journal of Nutrition.*²

Endorsed by Nutritional Experts

As Miami cardiologist Dr. Arthur Agatston, creator of the South Beach diet, explains, “There’s a lot of science behind [pomegranate’s] health benefits.” Dr. Agatston is said to recommend pomegranate to all of his patients.³

World-renowned nutritional expert Steven Pratt, M.D., senior staff ophthalmologist at the Scripps Memorial Hospital in La Jolla, California, counts pomegranates among the “superfoods” for optimizing health.⁴

Navindra Seeram, Ph.D., points out that among exotic fruits, pomegranate’s health benefits are supported by an explosion of peer-reviewed research.⁵ Dr. Seeram is assistant director of the UCLA Center for Human Nutrition and editor of a new book entitled *Pomegranates: Ancient Roots to Modern Medicine.* According to Dr. Seeram’s co-editor, Dr. Risa Schulman, “the pomegranate is truly a twenty-first-century natural medicine.”⁶ Furthermore, pomegranate’s safety has been confirmed in a number of experiments.^{6,7}

Unique Active Compounds

The health benefits of pomegranate are attributed to the high levels and diversity of the fruit’s unique phytochemicals. Of these natural protective ingredients, *punicalagins* have been established as the chemical marker compounds that should be used for the authentication, quality control and standardization of pomegranate products.⁵

Commercial pomegranate juice has been shown to have a **higher antioxidant activity** than tea (*Camellia sinensis*), red wine (*Vitis vinifera*), and other fruit juices. Unfortunately, the antioxidant content of pomegranate juice can vary widely due to processing and storage techniques. Another possible drawback to using pomegranate juice, for some consumers, is its high sugar and caloric content.^{8,9}

Thankfully, the recent development of proprietary extraction methods now makes it possible to consistently obtain the benefits of the whole pomegranate fruit, without the sugar and calories. This clinically-tested, **natural-spectrum** pomegranate whole fruit extract is standardized for both punicalagins and total polyphenol content.⁸ In addition to ensuring the content and ratio of active constituents, the development of this special, natural-spectrum extract offers consumers the advantages of convenience and economy.

The High Costs of Cardiovascular Disease

Cardiovascular diseases such as heart attack and stroke are among the top causes of death in the industrialized world.^{10,11} Not everyone who suffers a heart attack or stroke will die. The World Health Organization estimates that worldwide, at least 20 million people survive heart attacks and strokes every year, thus requiring medical care that is very costly. Stroke, in fact, is the leading cause of serious long-term disability.

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Pomegranates May Help Shield Against Stroke Damage

For those who suffer from stroke-induced brain injury, few treatment options are available. A large portion of stroke research must be conducted on animals, because stroke events cannot be mimicked satisfactorily in test tube experiments. Stroke is typically associated with *hypoxia-ischemia* damage to the brain. *Ischemia* refers to blood flow to cells and organs that is not sufficient to maintain their normal function, whereas *hypoxia* means “deficient in oxygen.” The structure within the brain called the “hippocampus,” important for learning and memory, is especially vulnerable to brain cell death caused by lack of blood flow to the brain.

A recent study using animal models found a dramatic **reduction in hypoxia-ischemia damage** to the hippocampus (33 to 93%) when rodents drank pomegranate polyphenols. The longer the feeding period and the higher the dose of ingested polyphenols from pomegranate, the more profound the neuroprotective effects. Animals whose diet had been supplemented for two weeks with the highest dose of pomegranate polyphenols had **68% fewer cells damaged** than in the brains of control animals.⁶

This study also found the **brain-protective effect** seen with pomegranate polyphenols to be far more significant than that of blueberries. The maximum brain-protective effect seen with blueberries was a 57% reduction of hypoxia-ischemia damage, whereas **pomegranates reduced damage by as much as 93%**. A small body of evidence suggests that continuing a diet of pomegranate polyphenols after a stroke is also beneficial.⁶

A Safeguard Against Cardiovascular Diseases

Atherosclerosis comes from the Greek words *athero* (meaning gruel or paste) and *sclerosis* (hard-ness). It's the name of the process in which deposits of fatty substances, oxidized LDL cholesterol, cellular waste products, calcium and other substances build up in the inner lining of an artery. This buildup is called “plaque.”¹²

Immune cells called *macrophages* engulf and ingest damaged, oxidized LDL particles in large numbers leading to the formation of “foam cells,” a key event in atherosclerotic lesion development.^{13,14} Oxidized LDL cholesterol is thought to play a key role in the inflammatory response in the arterial vessel wall.¹⁵ Polyphenolic antioxidants, such as those found in pomegranate, are associated with the inhibition of LDL oxidation and and macrophage foam cell formation.

A recent study reported on the long-term effects of pomegranate juice consumption on men and women with “severe atherosclerosis” (defined as 70-90 per cent narrowing of the internal carotid arteries). The carotid arteries are the main arteries in the neck that supply blood to the brain. Carotid artery disease is a major risk factor for ischemic stroke.^{16,17}

Those ingesting pomegranate juice for one year experienced substantial **improvements in carotid artery anatomy and function**. Atherosclerotic lesions in the carotid artery were reduced by 35% in those who consumed pomegranate juice for one year. These improvements were accompanied by a 130% increase in total antioxidant status along with a 21% reduction in systolic blood pressure. By comparison, carotid artery narrowing in those who did not consume pomegranate juice increased by 9%.¹⁶

Researchers at the Preventive Medicine Research Institute in Sausalito, California, directed by Dean Ornish, M.D., gave pomegranate juice or a comparable beverage daily to 45 patients with coronary artery disease. After 3 months, pomegranate juice drinkers had a 17 percent improvement in blood flow compared to an 18 percent worsening in the control group. This benefit was irrespective of changes in cardiac medication, blood pressure, weight, or other factors. The study team concluded that the antioxidants in pomegranate juice may help prevent the formation of fatty deposits on artery walls.¹⁵

Other research confirmed that pomegranates reduced the effects of stress on human blood vessel cells by stimulating the production of nitric oxide. Human endothelial cells that line blood vessels were exposed to excessive physical stress, such as might occur with high blood pressure. Cells that were treated with pomegranate juice had less evidence of damage from the stress. In addition, animal experiments

showed that pomegranate juice **significantly slowed hardening of the arteries** which developed from high cholesterol.^{18,19} Researchers concluded that pomegranate juice not only appears to prevent hardening of the arteries by reducing blood vessel damage, but the antioxidant-rich juice may also reverse the progression of this disease. Similar results were seen with the administration of a pomegranate fruit extract.²⁰

In another recent study with Type 2 diabetic patients, pomegranate antioxidants **reduced the uptake of oxidized “bad” LDL cholesterol** by immune cells, which is a major contributing factor to atherosclerosis.²¹

Protection Against Prostate Cancer

Prostate cancer is the second leading cause of cancer-related deaths among U.S. males, with a similar trend in many Western countries. Even a modest delay in disease progression, however, could significantly impact the quality of life of these patients.²² A 2007 study, published in the *Journal of Agricultural and Food Chemistry*, reports that the **growth of prostate cancer cells was significantly inhibited** by the pomegranate ellagitannins and their metabolites, showing the fruit’s potential against the disease.²³

The authors of the study, led by UCLA researcher Dr. Navindra Seeram, wrote: *We have shown that pomegranate ellagitannins metabolites are concentrated to a high degree in mouse prostate tissues. The current study contributes to the increasing body of evidence demonstrating the prostate cancer chemopreventive potential of pomegranate ellagitannins.*²³

Punicalagins in pomegranate account for much of the fruit’s antioxidant ability and the observed anti-cancer effects observed in this study. It appears that phytochemicals in pomegranate may also play a role in prostate cancer protection.²³

Although conventional treatment for prostate cancer is often successful, a third of patients are reported to have rising levels of prostate-specific antigen (PSA) in their blood after treatment. Of these men, 34% progress to deadly, metastatic prostate cancer within 15 years.²⁴ UCLA researchers led by Allan Pantuck, MD, conducted a study on men who had undergone surgery or radiation, but quickly experienced increases in prostate-specific antigen or PSA, a biomarker that

indicates the presence of cancer. The researchers measured “doubling time,” how long it takes for PSA levels to double, a signal that the cancer is progressing. The men’s overall PSA doubling time was nearly four times slower after they began drinking pomegranate juice. Sixteen of the 46 patients had a decrease in PSA levels — and in four, PSA levels dropped by half.²⁵

“I was surprised when I saw such an improvement in PSA numbers,” Dr. Pantuck said in a news release. “This is not a cure, but we may be able to change the way prostate cancer grows.”²⁶ Pantuck also believes that pomegranate juice may allow 65- to 70-year-old men treated for prostate cancer to outlive their risk of dying from their cancer.

Pomegranate Fruit Extract May Help Prevent Osteoarthritis

Findings from preliminary lab tests show that natural antioxidants in pomegranate fruit may thwart osteoarthritis. In a recent study, published in the *Journal of Nutrition*, pomegranate fruit extract was pitted against osteoarthritis in lab tests and the results were impressive. Pomegranate fruit extract reduced levels of an inflammatory chemical called interleukin-1 (IL-1). It also curbed enzymes that erode cartilage.²

Improved Immunity

The antimicrobial properties of plants are being studied by researchers worldwide. As a result, extracts or purified compounds from pomegranate are now known to possess **antibacterial, antifungal and antiviral activities.**⁶ Pomegranate extract was found to act synergistically with antibiotics used to treat methicillin-resistant and methicillin-sensitive *Staphylococcus aureus*. Significant synergistic activity was detected between pomegranate and the five antibiotics tested: chloramphenicol, gentamicin, ampicillin, tetracycline, and oxacillin. Authors of the study concluded that pomegranate extract “offers an alternative for the extension of the useful lifetime of these antibiotics.”²⁷ More recently, findings from the Department of Pharmacognosy at the University of Mississippi have linked the daily intake of pomegranate antioxidants to beneficial effects for the human immune system.²⁸

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Choose a Natural-Spectrum Pomegranate Extract

As previously mentioned, the health benefits of pomegranate are attributed to the high levels and diversity of the fruit's unique phytochemicals. Of these natural protective ingredients, **punicalagins** have been established as the chemical marker compounds that should be used for the authentication, quality control and standardization of pomegranate products.⁵

Unfortunately, levels of pomegranate's important antioxidant ingredients can vary widely in juices, depending on the fruit cultivar as well as processing and storage conditions. Also, there are limitations to using pomegranate juice for those concerned about sugar and caloric intake.⁸ A clinically tested, natural-spectrum pomegranate extract is now available, offering several advantages to consumers. This whole fruit extract, standardized for punicalagins, consistently provides the benefits of pomegranate without the sugar and caloric intake.

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