

POMEGRANATE EXTRACT

TRADITIONAL INDICATIONS

1. Atherosclerosis
2. High Cholesterol Levels
3. Low HDL Levels
4. High Triglycerides
5. Hypertension
6. Diabetes mellitus
7. Cigarette Smoking
8. Post-Menopausal State
9. Physical Inactivity
10. Obesity
11. Angiotensin Converting Enzyme
12. Family History of Heart Attack
13. Osteoarthritis (Degeneration of Cartilages, Tendons and Ligaments)
14. Cervical Spondylosis
15. Lumbar Spondylosis
16. Thoracic Spondylosis



Atherosclerosis

Atherosclerosis is the progressive and irregular distribution of lipid deposits within large and medium sized arteries. It leads the cause of death in develop countries, manifesting as a stroke or myocardial infarction (heart attack or cardiovascular accident). Atherosclerosis can develop in any part of the circulatory system: in the coronary arteries, leading to angina pectoris and myocardial infarctions; in the carotid arteries that supply the brain and can lead to stroke. Intermittent claudication, a condition characterized by narrowing the arteries in the leg, resulting in pain brought on by walking, is another manifestation of atherosclerosis.

Atherosclerosis can attack the kidneys as well, leading to hypertension and atheroembolic disease (blockage of a blood vessel due to a blood clot). Unfortunately, the majority of us are unaware that we have advanced atherosclerosis until symptoms of chest or leg pain or transient or full-blown stroke occur. Most people in developed countries have some form of atherosclerosis that may develop as early as childhood; not surprising considering the copious amounts of fat and sugar in the typical western diet. To understand how pomegranate attenuates atherosclerosis, it's important to review the process of atherosclerosis itself.

The blood vessels that carry our vital fluids are composed of intricate layers of tissue. The inner layer, called the intima, is the primary sight for atherogenesis. The initial stage of atherosclerosis begins with the "fatty streak," the accumulation of lipids in the intimal layer. This lipid accumulation results from LDL cholesterol

(low density lipoproteins) binding, or "sticking," to constituents in the intimal layer. This has the effect of trapping the LDL particle in the intimal layer - a process known as retention. Once trapped, the LDL is susceptible to chemical modifications in its lipid structures that ultimately promote atherosclerosis. These modifications result from oxidative reactions.

Recruitment of leukocytes, or white blood cells, in the formation of a fatty streak is the second step in the process of atherosclerosis. Modifications in the structure of LDL spark the activity of monocytes, a class of leukocytes. Once activated, monocytes migrate to the intima where oxidized LDL has been detected and differentiate into macrophages. The primary role of the macrophage is to seek out foreign material and, essentially, eat it (hence, the name macrophage, which means "large eater"). Macrophages consume oxidized LDL at a rampant pace, eventually becoming overloaded with cholesterol from the LDL particle and ultimately become what is known as a "foam cell." Foam cells are characteristic of atherosclerotic lesions. Why macrophages consumed modified LDL is still speculative, but is thought to be a sort of cleaning process to remove oxidized LDL, which may be seen as a foreign body. During the normal course of LDL consumption, some macrophages leave the intimal layer of the blood vessel, taking the cholesterol with it. Therefore, atherosclerosis occurs when more lipids enter the artery wall than leaves via macrophage transport or other pathways.

Phytochemistry

Pomegranate is composed of a rich variety of flavonoids, which comprise approximately 0.2% to 1.0% of the fruit. The list below summarizes the phytochemistry of pomegranate fruit. Approximately 30% of all anthocyanidins found in pomegranate are contained within the peel. The isoflavones genistein, diadzein, genistin, and diadzin as well as estrone, the metabolic derivative of estradiol, have been isolated from the seeds. The stems and roots of pomegranate contain alkaloids including isopelletierine, pseudopelletierine, and N-methylisopelletierine (PDR).

Phytochemistry of Pomegranate Fruit:

- Anthocyanidins
- Pelargonidin
- Ellagotannins
- Gallis Acid
- Ellagic Acid
- Pseudopelletierine
- Isopelletierine
- Methylisopelletierine
- Genistein
- Diadzein
- Genistin
- Diadzin
- Estrone

Additional Health Benefits of Pomegranate: Ellagic Acid

Pomegranate is also a rich source of ellagic acid, a phenolic normally found as a polymer with gallic acid, known as ellagitannin. There is a large body of evidence suggesting that ellagic acid is an inhibitor of chemically-induced cancers. Initial studies in mice showed that Ellagic acid reduces lung and skin tumors. Treatment of mice with ellagic acid shortly before injecting them with the carcinogen benzo[a]pyrene caused a 44 to 75% inhibition in the formation of lung tumors. Boukharta et al. observed that at doses of 0.06-4.0g/kg diet, Ellagic acid inhibited the multiplicity of lung tumors. Mukhtar showed that topical application of ellagic acid to the skin of mice exerted strong protective effects against skin carcinogens. Ellagic acid significantly reduces the incidence of polycyclic aromatic hydrocarbon-induced carcinomas. Dietary EA has been shown to reduce the incidence of N-2-fluorenylacetamide-induced hepatocarcinogenesis in rats and N-nitrosomethylbenzylamine (NMBA)-induced rat esophageal tumors.

Many people's lives have been touched in some way by cancer. Maybe they've lost a relative, a friend or an acquaintance; maybe they had a scare as a result of an annual physical. Regardless of what drives people to ask about cancer prevention, it is a perfect opportunity for them to learn about diet and supplements. Empowering people to preserve their health through intelligent choices puts responsibility in the patient's hands.

Cancer is a prominent killer of Americans - second only to heart disease - and is responsible for more than a half million deaths yearly. We are exposed to oxidizing and cancer producing substances daily. Fruit phenolics help limit the free radical initiation and DNA damage caused by these carcinogens and, therefore, fruit phenolics should lower the incidence of various types of cancer. These protective phytochemicals include the ellagic and hydroxycinnamic acids, which have been shown to degrade carcinogenic substances. Among other things, hydroxycinnamic acid helps degrade carcinogens and helps prevent nitrates in the digestive tract from being converted into the carcinogenic nitrosamines. Ellagic acid, which is particularly plentiful in pomegranates, also prevents carcinogen oxidation of cellular membranes.

Interest in ellagic acid has increased greatly during the last decade due to its extraordinary effectiveness as an antimutagen and anticarcinogen, and its potential as an inhibitor of chemically induced cancer. Dr. Gary Stoner at Ohio State University contributed pioneering research in our understanding of the phytomedicinal properties of ellagic acid. Initial studies on rodents by Dr. Gary Stoner have shown that ellagic acid significantly helps prevent, and reduce, certain cancers. Lesca (1983) investigated the effect of ellagic acid on carcinogens-induced lung tumors in mice. When administered ip or as a dietary admixture, ellagic acid decreased the multiplicity of tumors. Chang et al. (1985) showed that treatment of mice with ellagic acid shortly before an injection of different carcinogens caused a 44 to 75% inhibition in the number of lung tumors. Application of ellagic acid by Boukharta et al. (1992) inhibited the multiplicity of lung tumors in mice by 54%.

Other tissues in which ellagic acid has been shown to exhibit anticarcinogenic effects include the esophagus and liver. Mandal and Stoner (1990) reported inhibitory effects of ellagic acid on tumorigenesis in the esophagi of rats. The ellagic acid inhibited the development of both preneoplastic and eoplastic lesions by 21 to 50%. Ellagic acid also was found to be an effective inhibitor of tumorigenesis in the rat esophagus when administered before, during and after the carcinogen (Siglin et al. 1995). Mandal and Stoner (1990) demonstrated inhibition of nitrosobenzylmethylamine esophageal carcinoma in rats by dietary ellagic acid, apparently by inhibiting carcinogen metabolism and DNA damage to the esophagus. Daniel and Stoner (1991) later demonstrated 60% inhibition of nitrosobenzylmethylamine-induced esophageal tumors in rats by dietary ellagic acid.

Tanaka et al. (1988) investigated the effect of ellagic acid on the genesis of liver cancer in male rats. Rats were fed a diet containing 400 ppm of ellagic acid before, during and after administration of carcinogen in the diet. Ellagic acid reduced the number of altered foci and the incidence of hepatocellular neoplasms in the carcinogen-treated rats. Clinical tests conducted at the Hollings Cancer Center of the Medical University of South Carolina under the direction of Dr. Bhagavathi A. Narayanan (1999) reveal that the human body readily absorbs ellagic acid. Moreover, ellagic acid clinically has been shown to cause apoptosis (cell death) in cancer cells. The findings of Dr. Narayanan and her colleagues point to what may be the most potent way to prevent cancer, inhibit the development of cancer cells, and arrest the growth of cancer in persons with a genetic predisposition for the disease, through "normal diet."

Ellagic Acid: Positive Effects Against Cancers of the Breasts and Cervix

Breast cancer is second only to skin cancer as the most common form of cancer among women in the United States. The incidence of breast cancer has been rising for the past two decades, although researchers feel that much of the increase is associated with increased and improved screenings and detection. It is improvements in both screening and treatments that are believed to have led to the significant decrease in breast cancer mortality witnessed between 1992 and 1996. Nonetheless, about 40,600 American women will die from breast cancer during 2001. During 2001 as well, an estimated 192,000 new cases of invasive breast cancer will be diagnosed (ACS 2001). Epidemiological research by the National Cancer Institute (NCI 2001) estimates that, if current rates stay constant, 1 in 8 women born today will develop breast cancer sometime during their lives. Previously cited studies have described ellagic acid's abilities to prevent, inhibit, reduce and even destroy cancer cells. Research by Dr. Wendy A. Smith and colleagues (2001, 1999, 1998, 1997) at the University of Kentucky's Graduate Center for Toxicology also shows that ellagic acid specifically helps prevent the earliest chemical reactions which can lead to the development of breast cancer.

Ellagic Acid Combats Carcinogens from Cigarette Smoke

Dibenzo [a, l] pyrene (DBP) is a potentially deadly environmental chemical found in cigarette smoke, diesel exhaust and in other products of combustion. Research on rodent models has shown that DBP is one of the most potent mammary carcinogens known and, therefore, it often is used in laboratory research to create cancers to be studied in otherwise healthy cells. DBP, like other carcinogens, metabolizes with enzymes to produce specific carcinogenic chemicals which bind to DNA, resulting in the corruption of cellular DNA. Unrepaired or misrepaired damage to cellular DNA produces mutant cells which may become cancerous and proliferate. Dr. Smith's team found that ellagic acid inhibited the binding of DBP carcinogenic chemicals to the DNA of human breast cells by 45%, thereby reducing carcinogen bioactivation by 45%. The carcinogen, DBP, itself, though, also can bind directly to DNA without first metabolizing with enzymes to create byproduct carcinogenic chemicals. In a 1998 study of six cancer chemopreventive agents, Dr. Smith's team found that ellagic acid was the only test agent observed that inhibited the binding of the carcinogen DBP directly to DNA in the absence of microsomal enzymes. Intervention with ellagic acid inhibited the direct binding of DBP to DNA by 64%, thereby reducing carcinogen bioactivation by 64%. One of the most potent carcinogens to which tobacco smokers expose themselves is nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanon (NNK). Drs. Teel and Castonguay (1992) at Loma Linda University in California tested the antimutagenic efficacies of polyphenolics, including ellagic acid, on NNK in *Salmonella typhimurium* TA1535. Ellagic acid was found to inhibit mutagenesis by 67%. For ellagic acid an almost complete inhibition of the mutagenicity of CSC and SNUS in STY was indicated. Along with chlorogenic acid, the ellagic acid reduced the mutagenicity of CSC and also strongly inhibited SNUS mutagenicity (Romert et al. 1994).

The protective effect of Ellagic acid is thought to be its ability to induce cellular detoxification enzymes such as NAD(P)H:quinone reductase (QR). Rats fed Ellagic acid demonstrated a 9-fold increase in hepatic and a 2-fold increase in pulmonary QR. Induction of glutathione S-transferase (GST) enzymes can increase detoxification of carcinogens and reduce carcinogen-induced mutagenesis and tumorigenesis. Rats fed ellagic acid demonstrated significant increases in total hepatic GST activity.

Thus, in addition to pomegranate's profound effect on atherosclerosis, it may also protect against chemical toxins frequently found in our environment. Pomegranate fruit extract appears to be a promising supplement for combating two of the biggest killers in developed countries: cancer and heart disease.

ABOUT POMEGRANATE EXTRACT

Pomegranate (*Punica Granatum L*) is a native plant of Northern Africa and the Caucasus Mountains and is widely distributed throughout the southern United States. The name pomegranate comes from the Latin "pomum," meaning apple, and "granatus," meaning full of seeds. The botanical name is derived from old French: pumegrenate - pomegranate apple.

The pomegranate tree was said to have flourished in the Garden of Eden and has been used extensively in the folk medicine of many cultures. It was mentioned in the papyrus Ebers of Egypt written about 1550 B.C., and was a favorite motif in the temple of Solomon. The juicy pomegranate fruit with its multitudinous seeds was a popular symbol of fertility and fecundity in ancient times and it is counted among the seven kinds of produce with which the land is blessed. Doctors in Greece prescribed pomegranate juice as a remedy for inflammation, intestinal worms, persistent coughs, diarrhea, and dysentery. The Babylonians regarded pomegranate seeds as an agent of resurrection. Persians believed that the seeds conferred strength and invincibility on the battlefield, and in ancient India, the seeds were revered for their powers to promote longevity and immortality. People of the Georgian Republic in Russia used pomegranate for arresting chronic mucous discharges, passive hemorrhages, night sweats and diarrhea. It has also been prescribed to strengthen the human capillary system, and prevent atherosclerosis, asthma, tonsillitis and bronchitis.

DOSAGE and DIRECTIONS



For Adults 18 yrs or above, one (1) Capsule twice daily (every 12 hours) in empty stomach with lukewarm water.

Please give minimum 30 min to take any food after taking **POMEGRANATE EXTRACT**.

Take optimum water to enhance elimination of released toxins from the body.

Please read Healing Crisis for more information.

INGREDIENTS

Supplement Facts		
Serving Size : 1 Capsule (500 mg each)		
Servings per container: 60.		
Each Serving contains		%DV
Punica granatum L	500 mg.	*
95% Ellagic acid		
45% Polyphenols		
45% Punicalagin		
* Daily value (DV) not established.		

HEALING CRISIS

There is no known healing crisis or side effects