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**FILE: ■Pomegranate (*Punica granatum*)**  
**■ACE (Angiotensin Converting Enzyme)**  
**■Blood Pressure**

**HC 010146-253**

**Date: March 31, 2004**

**RE: Pomegranate Juice Reduces Blood Pressure in Hypertensive Patients in Small Study**

Aviram M, Dornfeld L. Pomegranate juice consumption inhibits serum angiotensin converting enzyme activity and reduces systolic blood pressure. *Atherosclerosis* 2001;158:195–198.

Juice from the pomegranate (*Punica granatum*) is rich in tannins, including ellagitannins, anthocyanins, catechins, and gallic and ellagic acids. The authors recently showed in a previous study that the consumption of pomegranate juice exhibited potent anti-atherogenic effects (reduces arterial plaque buildup) in healthy humans and in atherosclerotic mice and identified polyphenols as the active compounds responsible for the effects of pomegranate juice against low-density-lipoprotein oxidation. Because these anti-oxidants have been shown to reduce blood pressure and hypertension is a known risk factor from the development of atherosclerosis, the authors studied the effect of pomegranate juice consumption on blood pressure. Furthermore, hypertensive patients with elevated plasma rennin-angiotensin activity have an increased risk of myocardial infarction (i.e., heart failure); therefore, the effects of pomegranate juice on serum angiotensin converting enzyme (ACE) activity were studied as well.

Ten hypertensive patients (7 men and 3 women) aged 62–77 years with a mean systolic blood pressure of  $155 \pm 7$  mm Hg and a mean diastolic blood pressure of  $83 \pm 7$  mm Hg were enrolled in the study. The patients consumed 50 mL of concentrated pomegranate juice daily for 2 weeks, which provided 1.5 mmol of total polyphenols daily. Blood pressure measurements and serum ACE activity were determined before and after consumption of the pomegranate juice.

In 7 of the 10 patients, serum ACE activity decreased significantly ( $P < 0.05$ ) by 36% after 2 weeks of pomegranate juice consumption. Inhibition of ACE is the mechanism of ACE inhibitor drugs that are used in patients with atherosclerosis and high blood pressure.

Reduction of ACE has been shown to reduce the number of heart attacks in patients with heart disease. This inhibitory effect of pomegranate juice on serum ACE activity may have been secondary to the juice's anti-oxidative properties or may have been related to a direct effect of the juice's active compounds. Juice consumption resulted in a minimal, although significant ( $P < 0.05$ ), reduction in systolic blood pressure of 5%. Because no significant correlation between the reduction in serum ACE activity and blood pressure was found, the reduction in serum ACE activity may not have been primarily responsible for the reduction in blood pressure. Elevated serum ACE activity is associated with an increased susceptibility to lipid peroxidation and thus the tendency of LDL cholesterol to attach to the arterial walls, increasing plaque buildup, reducing arterial volume, and increasing blood pressure; therefore, an inhibitory effect of pomegranate juice on serum ACE activity contributes to an anti-oxidant environment and an attenuated risk of atherosclerosis.

The authors conclude that "the significant inhibitory effect of pomegranate juice on serum ACE activity and the minor attenuation in blood pressure in hypertensive patients, in addition to its potent inhibitory effect on lipid peroxidation...suggests that pomegranate juice consumption can offer a wide protection against cardiovascular disease."

—*Brenda Milot, ELS*

The American Botanical Council has chosen not to reprint the original article.

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