P.O. Box 144345 Austin, TX 78714-4345 ▪ 512.926.4900 ▪ Fax: 512.926.2345 ▪ www.herbalgram.org

HerbClip™

File: ■ Garlic (*Allium sativum*)
■ Blood Pressure
■ Hypertension

HC 111323-492

Date: March 14, 2014

RE: Study Finds Garlic Lowers Blood Pressure in Patients with Essential Hypertension

Ashraf R, Khan RA, Ashraf I, Qureshi AA. Effects of *Allium sativum* (garlic) on systolic and diastolic blood pressure in patients with essential hypertension. *Pak J Pharm Sci*. September 2013;26(5):859-863.

Hypertension can lead to cardiovascular disease, stroke, and renal dysfunction, and it is estimated that this will affect 29% of the world's population by 2025. Since this disease has the potential to affect such a large portion of the population, finding inexpensive, readily available treatments may help reduce society's economic burden. Garlic (*Allium sativum*) is a common culinary and medicinal herb. The authors hypothesized that garlic would reduce blood pressure in patients recently diagnosed with stage I essential hypertension.

The single-blind, placebo-controlled study was conducted over 24 weeks. Patients were included in the study if they had recently been diagnosed with stage I essential hypertension and were between 20 and 70 years old. They were excluded for the following reasons: allergy to garlic or β-blockers, pregnant or lactating, history of heart failure, coronary artery disease, and/or bradycardia, liver or kidney dysfunction, or if they were taking systemic steroids, androgens, or other drugs known to interact with hypertensive agents. Two hundred and ten patients were divided into the following 7 treatment groups: placebo, 100 mg daily atenolol (a β-blocker commonly used to treat hypertension), 300 mg garlic/day, 600 mg garlic/day, 900 mg garlic/day, 1200 mg garlic/day, and 1500 mg garlic/day. Garlic tablets were not described. Blood pressure was evaluated at 0, 12, and 24 weeks. Patients were restricted from using other medications during the study period. They were encouraged to maintain their usual garlic and onion (*Allium* spp.) consumption, normal diet, and activity level throughout the study. Data were analyzed with one-way Analysis of Variance (ANOVA) and Tukey post-hoc tests.

Sixty percent of the patients were men, and the average age was 48 years for the garlic groups and 50 years in the atenolol group. Eighteen patients dropped out of the study for various reasons, including non-compliance with the treatment protocol, abdominal

discomfort, and heartburn. One patient was removed due to uncontrolled high blood pressure.

Both systolic and diastolic blood pressure showed significant reductions in all garlic treatment groups at the end of 12 and 24 weeks when compared to the placebo group ($P > 0.005$). All garlic doses yielded a significant decrease in both systolic and diastolic blood pressure compared to baseline ($P<0.005$ and $P<0.005$); doses over 900 mg/d showed a significant decrease in both by 12 weeks ($P<0.005$ and $P<0.005$). The treatment effect was dose dependent with higher garlic concentrations having the greatest effect. The reduction in diastolic and systolic blood pressure with garlic treatment was lower than that in the atenolol group. Systolic blood pressure decreased by 5.23% with highest dose of garlic (1500 mg/day) and 6.22% in the atenolol group. Diastolic blood pressure decreased by 5.74% with a garlic dose of 1200 mg/day and by 9.3% in the atenolol group. No statistics are provided comparing these measurements, so it is unknown whether this difference is significant.

In this study, there is a clear reduction in systolic and diastolic blood pressure with garlic supplementation over 24 weeks. Several other studies of shorter duration have not found a relationship between blood pressure and garlic; however, 1 other study found a reduction in blood pressure, total cholesterol, and triglycerides. Garlic is thought to affect blood pressure through the compound allicin and its metabolism that results in the production of hydrogen sulfide. These compounds may inhibit the vasodilator angiotensin II, and thereby modulate the activity of prostaglandin and renin angiotensin.

These results suggest that garlic supplements may be an effective, inexpensive treatment for hypertension that could be used alone or in conjunction with traditional pharmaceutical drugs. A major shortcoming of this study was the fact that the authors did not describe the garlic tablets nor provide the manufacturer, if there was one. This means that the study cannot be replicated to confirm their results.

—Cheryl McCutchan, PhD

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