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### ASK THE DOCTOR

Answers to Your Health Questions

**Michael T. Murray, N.D.,** is a leading researcher and author in the field of natural medicine. He is co-author of *The Encyclopedia of Natural Medicine*, and sole author of several books, including his latest *Natural Alternatives to Over-the-Counter and Prescription Drugs*, *The Healing Power of Herbs*, and *Natural Alternatives to Prozac*

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Garlic has been used throughout history for the treatment of a wide variety of conditions. Its usage predates written history. Sanskrit records document the use of garlic remedies approximately 5,000 years ago, while the Chinese have been using it for at least 3,000 years. The Codex Ebers, an Egyptian medical papyrus dating to about 1,550 B.C., mentions garlic as an effective remedy for a variety of ailments, including high blood pressure, headache, bites, worms, and tumors. Hippocrates, Aristotle, and Pliny cited numerous therapeutic uses for garlic. Stories, verse, and folklore (such as its alleged ability to ward off vampires) give historical documentation to garlic's power. Sir John Harrington in *The Englishman's Doctor*, written in 1609, summarized garlic's virtues and faults:

Garlic then have power to save from death Bear with it though it maketh unsavory breath, And scorn not garlic like some that think It only maketh men wink and drink and stink.

Another favorite saying about garlic is, "Eat garlic and gain your health, but lose your friends." Fortunately, there are now commercial preparations that provide all of the benefits of garlic without the social consequences.

#### **Q. What are the factors responsible for the benefits of garlic?**

**A.** The majority of the beneficial effects of garlic are attributed to allicin and its other sulfur-containing compounds like diallyl disulfide, diallyl trisulfide, and vinyl-dithiols. Allicin is mainly responsible for the pungent odor of garlic. It is formed by the action of the enzyme alliinase on garlic's "mother" compound, alliin. The enzyme is inactivated by heat, oxygen, or water which accounts for the fact that cooked garlic as well as aged garlic preparations produce neither as strong an odor as raw garlic nor nearly as powerful medicinal effects.

#### **Q. What should I look for in a garlic supplement?**

**A.** The modern use of garlic has focused on its ability to lower cholesterol and blood pressure in the attempt to reduce the risk of dying prematurely from a heart attack or stroke. The majority of studies showing a positive effect of garlic and garlic preparations are those which deliver a sufficient dosage of allicin. Since allicin is the component in garlic that is responsible for its easily identifiable odor, some manufacturers have developed highly sophisticated methods in an effort

to provide the full benefits of garlic—they provide odorless garlic products concentrated for alliin because alliin is relatively "odorless" until it is converted to allicin in the body. Products concentrated for alliin and other sulfur compounds provide all of the benefits of fresh garlic, but are more "socially acceptable."

#### **Q How much garlic do I need?**

**A** Based on a great deal of clinical research, the dosage of a commercial garlic product required to produce meaningful reductions in cholesterol and blood pressure should provide a daily dose of at least 10 mg alliin or a total allicin potential of 4,000 mcg. This dosage equates to roughly one to four cloves of fresh garlic.

#### **Q. What about aged garlic?**

**A.** For years I have been working very hard to educate physicians, the health food industry, and consumers about the benefits of garlic. Based on an extensive body of scientific evidence it is clear that the best garlic products are those which most resemble fresh garlic. Typically in my lectures, after I have reviewed all of the numerous studies which utilized fresh garlic preparations standardized for alliin content and deliverable allicin, the first question that's asked is, "What about aged garlic?"

My response has always been aged garlic does not produce anywhere



near the same benefits as fresh garlic preparations nor does it meet the standards set by the German Commission E to allow any beneficial claims to be made. To highlight the superiority of fresh garlic preparations over aged garlic, let's examine the results of the effects of both on cholesterol, triglycerides, and blood pressure.

The data above for aged garlic is based on a recently completed double-blind, placebo-controlled, cross-over study in 41 men with beginning cholesterol levels in 220-290 mg/dl range.<sup>1</sup>

The men received either aged garlic (7.2

	<b>Aged Garlic</b>	<b>Fresh Garlic Preparations</b>
Total Cholesterol	7% reduction	10%-12% reduction
LDL (bad) Cholesterol	4% reduction	15% reduction
HDL (good) Cholesterol	no effect	10% increase
Note: For every 1 % decrease in LDL, the risk for a heart attack or stroke drops 1%; for every 1% increase in HDL the risk drops 4%.)		
Systolic Blood Pressure	5 mm/Hg reduction	11 mm/Hg reduction
Diastolic Blood Pressure	no effect	5 mm/Hg reduction
Daily Dosage	7.2 grams	>4,000 mcg of allicin
Monthly Retail Cost	\$89.85	\$13.95 to \$21.95

grams per day!) or placebo for six months and then those who received the aged garlic were then given the placebo and vice versa for an additional four months. The results demonstrated a reduction of total cholesterol of 7% and LDL cholesterol of 4%, but no change in HDL cholesterol or triglyceride levels. The systolic blood pressure dropped an average of 5 mmHg during the aged garlic period, but there was no change in diastolic blood pressure.

Now, let's take a look at the effect of fresh garlic preparations in similar patient populations. According to the results from numerous double-blind, placebo-controlled studies in patients with initial cholesterol levels greater than 200 mg/dl, supplementation with commercial preparations providing a daily dose of at least 10 mg alliin or a total allicin potential of 4,000 mcg can lower total serum cholesterol levels by about 10% to 12%, LDL cholesterol will decrease by about 15%, HDL cholesterol levels will increase by about 10%, and triglyceride levels will

typically drop by 15%.<sup>2,7</sup> These results are generally achieved within one to three months—a significantly shorter amount of time than the aged garlic group.

Blood pressure readings have also shown greater reductions compared to the results in the study with aged garlic. With fresh garlic preparations, typical reductions of 11mm/Hg for the systolic and 5.0 in the diastolic are usually achieved within a one - to three-month period.<sup>8,9</sup>

**Q Do garlic supplements contain allicin?**

**A.** While some do, most do not as allicin is extremely unstable.<sup>2,10</sup> More importantly, the better commercially available garlic supplements provide alliin which is converted to allicin inside the gastrointestinal tract. Because alliin and alliinase are very stable when dry, properly prepared fresh garlic preparations preserve the allicin-producing action when the garlic powder mixes with the fluids of the intestinal tract (these preparations are enteric-coated to prevent the formation of allicin within the stomach, which prevents garlic breath). In contrast, aged garlic contains absolutely no allicin or allicin degradation products.<sup>2,10</sup> This fact is probably responsible for the poor results noted in lowering cholesterol and blood pressure as well as the lack of antimicrobial activity of aged garlic preparations.<sup>1,11</sup>

**Q. Is allicin absorbed in humans?**

**A** Yes, but there are more relevant considerations. Whether the beneficial effects of these fresh garlic preparations are due directly to the allicin or some of the breakdown products is irrelevant from a clinical perspective. What consumers and practitioners should be most concerned about is the bottom line—what are the clinical effects and side effects? From this perspective it is quite clear that fresh garlic preparations are superior. Just look at the numbers.

**Q Is allicin safe?**

**A** Beware of the propaganda on the dangers of allicin. According to published reports, the estimated dosage of pure allicin required to produce human toxicity is estimated to be 600 g.<sup>9</sup> To achieve this level of allicin, it would require roughly 150,000 tablets of the highest allicin-containing garlic supplement on the market. In reality, fresh garlic preparations have demonstrated no significant side

effects in the millions of people who have taken them worldwide, To say otherwise is complete nonsense.

**Final Comment**

Garlic is a valuable medicine, especially for the heart and vascular system. To achieve the maximum health benefits of garlic, it is recommended that you utilize preparations that most resemble fresh garlic and deliver a minimum of 4,000 mcg of allicin.

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