



# High Blood Pressure (Hypertension)

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Literature Education Series On Dietary Supplements

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High blood pressure (hypertension) is one of the leading causes of disability or death due to stroke, heart attack, heart failure and kidney failure. It's also the most common chronic illness Americans face. An estimated 50 million American adults have high blood pressure. That's about one out of every four people in this country. Each year, 2 million new cases of the disease are diagnosed. High blood pressure is often called the "silent killer" because it doesn't produce any signs or symptoms to warn you that you have a problem. Although the medical term for high blood pressure, hypertension, means high tension in arteries, the condition has nothing to do with nervous tension. Signs and symptoms such as headaches, dizziness or nosebleeds typically don't occur until high blood pressure has advanced to a higher, and possibly, life-threatening stage. Yet even some people with very high blood pressure don't experience any signs or symptoms. More commonly, people develop symptoms of coronary artery disease, stroke or kidney disease— complications of uncontrolled high blood pressure.

A typical normal blood pressure reading is 120/80 mm Hg. This means that the pressure in your arteries is 120 mm Hg during your heart's pumping phase (systolic pressure). Between beats when your heart is relaxing and filling with blood, blood pressure (diastolic pressure) is 80 mm Hg. Your blood pressure is considered high if your systolic pressure is consistently 140 mm Hg or higher, your diastolic pressure is consistently 90 mm HG or higher, or both. A diagnosis of high blood pressure requires having your blood pressure measured periodically over a period of a few weeks to months to see if it remains increased. The conventional medical treatment for high blood pressure involves the use of one or more prescription medications. Although usually successful in reducing blood pressure, these drugs have various undesirable effects, and must always be used under a doctor's supervision.

## **Garlic**

Garlic is probably the granddaddy of all natural blood pressure lowering agents, with an extensive traditional history of use for this purpose. This traditional use has been scientifically validated in a meta-analysis that included ten double-blind studies.<sup>1</sup> All of these studies administered garlic for at least four weeks, typically in doses of 600–900 mg daily. In those studies which were limited to people with hypertension, the average blood pressure-lowering effect was highly clinically significant. To assure maximum benefit, I

recommend a garlic supplement that has been standardized for its active constituents: Allicin, Allin, Sulphur, Scordinin, Ajoenes, Dithins, & Diallyl Sulfides.

### **Co-enzyme Q<sub>10</sub>**

Co-enzyme Q<sub>10</sub> (CoQ10) is a vitamin-like substance involved in cellular energy metabolism. It has also been reviewed in the scientific literature, and found to be used in oral form to treat various cardiovascular disorders.<sup>2</sup> Research indicates that CoQ10 affects blood vessels in a way that should cause a decrease in blood pressure.<sup>3</sup> In fact, this has been substantiated in a number of studies where CoQ10 significantly lowered blood pressure in people with hypertension.<sup>4 5</sup><sup>6 7</sup> All of these studies used at least 50 mg of CoQ10 taken twice daily. You should expect about 10 weeks of supplementation to pass before looking for results.

### **Omega 3 fatty acids**

According to a meta-analysis of thirty-one studies, the omega 3 fatty acids found in fish oils (e.g., EPA, DHA) effectively lower blood pressure.<sup>8</sup> This effect was dependent on the amount of omega 3 fatty acids used, with best results occurring in those studies using very high doses— 15 grams daily. To obtain 15 grams of the omega 3 fatty acid would generally require consuming an enormous number of capsules! Such huge doses would not be a reasonable addition to a dietary supplement program for most people. Another possibility is to use about 3 grams omega 3 fatty acids. If you use a high potency omega 3 supplement that provides about 625 mg of the fatty acids per capsule, then you could get the 3 grams by taking 5 capsules daily. Research has shown that significant reductions in blood pressure occurred at these lower intakes, just not as impressive as with the higher doses.

### **Calcium**

Calcium supplementation has been shown to lower blood pressure when given in doses of 800–1500 mg daily. In fact, an analysis of forty-two studies indicated that calcium supplementation led to a statistically

significant average drop in blood pressure. Although this is certainly positive, you should also know that the decrease was not large enough to meaningfully improve health.<sup>9</sup> Even so, results would likely have been better if the analysis had been limited only to studies of hypertensive people, because calcium has little if any effect on those with normal blood pressure. In the aforementioned analysis, blood-pressure lowering effects were seen both with dietary calcium and with use of calcium supplements. Although average decreases in blood pressure from calcium are clearly small, each person responds differently. In fact, some evidence suggests that people with hypertension whose blood pressure is affected most by changes in salt intake respond best to calcium supplementation.<sup>10</sup> To determine if calcium supplementation will be beneficial for you, try a twelve-week trial of 1000-1200 mg of calcium daily, and monitor your blood pressure.

### **Magnesium**

Research has shown that magnesium supplementation in doses of 350–500 mg daily can lower blood pressure;<sup>11</sup> although not all studies agree.<sup>12</sup> It seems that magnesium is particularly effective in people who are taking potassium depleting diuretics.<sup>13</sup> These type of diuretics can also deplete magnesium. Consequently, the drop in blood pressure resulting from magnesium supplementation in people taking these drugs may result from overcoming a mild magnesium deficiency.

### **Hawthorne**

Hawthorne has been used traditionally as a cardiac tonic, and current uses include treatment for angina, hypertension, arrhythmias, and congestive heart failure.<sup>14</sup> Germany's Commission E has validated the use of Hawthorn in cases of cardiac insufficiency, resulted in an improvement of subjective findings as well as an increase in heart work tolerance, and a decrease in pressure/heart rate product.<sup>15</sup> (Although Hawthorne Berry products are often marketed, it is the Hawthorne leaves and flowers which have been so carefully

researched and validated.)

### **Vitamin C**

Vitamin C's role in maintaining the health of arteries is well established.<sup>16</sup> Furthermore, a review of vitamin C research indicates that most studies have reported a relationship between increased blood and dietary levels of the vitamin to a reduction in blood pressure.<sup>17</sup>

This relationship however, might result from diets high in fruit and vegetables rather than from vitamin C itself. Nonetheless, the relationship exists, and certainly lends credence to the use of vitamin C for arterial health, and potentially reducing blood pressure. A recommendation would be at least 1000 mg of vitamin C daily.

### **Chitosan**

The previous section on "High Cholesterol" briefly discussed the value of the shellfish fiber chitosan in lowering cholesterol levels. As it turns out, both animal and human research indicates that chitosan may have an additional cardiovascular benefit in preventing the blood pressure-elevating effects of salt, possibly by reducing absorption of chloride. A small study showed that 5000 grams of chitosan taken by men with a highly salted meal resulted in no elevation in blood pressure, while the same meal without chitosan significantly elevated systolic blood pressure.<sup>18</sup>

### **L-Arginine**

L-arginine is an amino acid arginine used by the body to make nitric oxide, a substance that allows blood vessels to dilate, which in turn can lower blood pressure. Human research has shown that intravenous arginine was able to lower blood pressure<sup>19</sup> In one study, a combination of oral arginine (2000 mg taken three times daily) plus conventional drugs used to treat hypertension was found to be significantly more effective than placebo alone in patients who previously did not respond to the same drugs taken without arginine.<sup>20</sup>

### **Taurine**

Some researchers have observed that a

deficiency of the amino acid taurine plays a role in elevating blood pressure in people with hypertension.<sup>21</sup> Some taurine research has found that supplementation lowers blood pressure in animals<sup>22</sup> and humans,<sup>23</sup> possibly by reducing levels of the hormone epinephrine (adrenaline). The dosage used in humans was 6000 mg daily.

### **Diet and/or other considerations**

By altering diet, a person can also help to lower blood pressure. If the person is overweight, the most effective measure would be to follow an appropriate reduced-fat, calorie-controlled diet to help achieve weight loss. Salt-sensitive individuals can reduce salt intake. Eating foods that are low in fat and high in fiber is also helpful. Foods high in potassium (such as fruit) and high in calcium (such as dark leafy-green vegetables and low fat/fat-free dairy products) and magnesium should be eaten. Alcohol should only be used moderately. Research has shown that such a diet led to large reductions in blood pressure (11.4 systolic and 5.5 diastolic) in just eight weeks. Similarly, vegetarian diets have been reported to significantly lower blood pressure. One note of caution: If you plan on increasing your fruit intake, be advised that fruit contains so much potassium that people taking "potassium sparing" drugs (as some hypertensives do) can end up with too much potassium by eating several pieces of fruit per day. Therefore, people taking potassium sparing diuretics should consult the prescribing doctor before increasing fruit intake. There may also be an advantage in reducing the intake of refined sugar, since sugar has been reported to increase blood pressure in both animals and humans. In addition, most people are aware that caffeine can increase blood pressure. Consequently, a reduction in the consumption of caffeine-containing beverages (e.g., coffee, tea, chocolate, cola drinks, and some medications) seems prudent. Furthermore, food allergies were reported to contribute to high blood pressure in a study of people who had migraine headaches. In that report, all fifteen people who also had high blood pressure

experienced a significant drop in blood pressure when put on a hypoallergenic diet. People suspecting food allergies should check. From a non-dietary standpoint, consider that smoking is particularly injurious for people with hypertension. The combination of hypertension and smoking greatly increases the risk of heart disease-related sickness and death. Daily exercise can lower blood pressure significantly. People over forty years of age should consult with their doctor before starting an exercise regime. A twelve-week program of Chinese T'ai Chi was reported to be almost as effective as aerobic exercise in lowering blood pressure in sedentary elderly people with high blood pressure. Of course the practice of T'ai Chi also has relaxing qualities, which may help explain the efficacy of this non-intensive form of exercise in reducing blood pressure. An associated concept is that some kind of relationship seems to exist between stress and high blood pressure. Consequently, its not surprising that some promising research using combinations of yoga, biofeedback, and/or meditation show a tendency toward improvement in hypertension.

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