Most people can't tell when their blood pressure is high, which is why hypertension is called the "silent killer." In this case, what you don't know can hurt you. Elevated blood pressure can lead to a greatly increased risk of heart attack, stroke, and many other serious illnesses. Along with high cholesterol and smoking, hypertension is one of the most important causes of atherosclerosis. In turn, atherosclerosis causes heart attacks, strokes, and other diseases of impaired circulation.

The mechanism by which high blood pressure produces atherosclerosis is somewhat similar to what happens in a hose fitted with a high-pressure nozzle. All such nozzles come with a warning label that states, "Make sure to discharge pressure in hose after using." Unfortunately, many people frequently fail to pay attention to the warning and leave the hose puffed up with full pressure overnight. This rather common practice does not produce any immediate consequences. The hose doesn't develop leaks at the seams or burst outright on the first occasion you leave it untended. However, a garden hose that is frequently left under pressure will begin to age more rapidly than it would otherwise. Its lining will begin to crack, its flexibility will diminish, and within a season or two the hose will be sprouting leaks in all directions.

Similarly, when blood vessels are exposed to constantly high pressure, a similar process is set in motion. Blood pressures as elevated as 220/170 (systolic pressure/diastolic pressure), quite common during activities, such as weight lifting, do no harm. Only when excessive pressure is sustained day and night do blood vessel linings begin to be injured and undergo those unhealthy changes known as atherosclerosis.

Although it is important to lower blood pressure with all deliberate speed, only rarely does it need to be lowered instantly. In most situations, you have plenty of time to work on bringing down your blood pressure. However, that doesn't mean that you should ignore it. Over time, high blood pressure can damage nearly every organ in the body.

The best way to determine your blood pressure is to take several readings at different times during the day and on different days of the week. Blood pressure readings will vary quite a bit from moment to moment; what matters most is the average blood pressure. Thus, if many low readings balance out a few high readings, the net result may be satisfactory. However, it is essential not to ignore a high value by saying, "I was just stressed then." Stress is part of life, and if it raises your blood pressure once, it will do so again. To come up with an accurate number, you must include every measurement in your calculations.
In most cases, the cause of hypertension is unknown. The kidneys play an important role in controlling blood pressure, and the level of squeezing tension in the blood vessels makes a large contribution as well.

Lifestyle changes, such as quitting cigarettes, losing weight, and increasing exercise, can dramatically reduce blood pressure. Regarding exercise, one study found that engaging in aerobic exercise 60 to 90 minutes weekly may be sufficient for producing maximum benefits. Another study found that taking four 10-minute “exercise snacks” of brisk walking per day significantly improves blood pressure.

For many years doctors advised patients with hypertension to cut down on salt in the diet. Today, however, the value of this stressful dietary change has undergone significant questioning. Considering how rapidly our knowledge is evolving, we suggest consulting your physician to learn the latest recommendations.

If lifestyle changes fail to reduce blood pressure, or if you can't make these alterations, many effective drugs are available. Sometimes you need to experiment with a few to find one that agrees with you.

### Principal Proposed Natural Treatments

There are no herbs or supplements for hypertension with solid scientific support. However, the supplement coenzyme Q$\text{_{10}}$ ($\text{CoQ}_{10}$) and extracts from the herb *Stevia rebaudiana* have shown some promise in preliminary trials.

#### Coenzyme Q$\text{_{10}}$

The supplement $\text{CoQ}_{10}$ has shown promise as a treatment for high blood pressure, but the evidence that it works is not yet strong.

An 8-week, double-blind, placebo-controlled study of 59 men already taking medication for high blood pressure found that 120 mg daily of $\text{CoQ}_{10}$ reduced blood pressure by about 9% as compared to placebo.

In addition, a 12-week, double-blind, placebo-controlled study of 83 people with isolated systolic hypertension (a type of high blood pressure in which only the "top" number is high) found that use of $\text{CoQ}_{10}$ at a dose of 60 mg daily improved blood pressure measurements to a similar extent.

Also, in a 12-week, double-blind, placebo-controlled trial of 74 people with diabetes, use of $\text{CoQ}_{10}$ at a dose of 100 mg twice daily significantly reduced blood pressure as compared to placebo.

Anti hypertensive effects were also seen in earlier smaller trials, but most of them were not double-blind and, therefore, mean little.

For more information, including dosage and safety issues, see the full $\text{CoQ}_{10}$ article.

#### Stevia

The herb stevia is best known as a sweetener. Its active ingredients are known as steviosides. In a 1-year, double-blind, placebo-controlled study of 106 people with moderate hypertension (approximately 165/103), steviosides at a dose of 250 mg three times daily reduced blood pressure by approximately 10%. Full benefits took months to develop. However, this study is notable for finding no benefits at all in the placebo group. This is unusual and tends to cast doubt on the results.

Benefits were also reported in a 2-year, double-blind, placebo-controlled study of 174 people with milder hypertension (average initial BP of approximately 150/95). This study used twice the dose of the previous study: 500 mg three times daily. A reduction in blood pressure of approximately 6%-7% was seen in the
treatment group as compared to the placebo group, beginning within 1 week and enduring throughout the entire 2 years. At the end of the study, 34% of those in the placebo group showed heart damage from high blood pressure (left ventricular hypertrophy), while only 11.5% of the stevioside group did, a difference that was statistically significant. No significant adverse effects were seen.

However, once again, no benefits at all were seen in the placebo group. This is a red flag for problems in study design. Both of these studies were performed in China, a country that has a documented history of questionable medical study results. Furthermore, a study by an independent set of researchers failed to replicate these findings. And, another study involving people with diabetes, as well as healthy subjects, found that stevia, at a dose of 250 mg three times daily, had no significant effect on blood pressure after 3 months of treatment.

Furthermore, a study by an independent set of researchers failed to replicate these findings. And, another study involving people with diabetes, as well as healthy subjects, found that stevia, at a dose of 250 mg three times daily, had no significant effect on blood pressure after 3 months of treatment.

For more information, including dosage and safety issues, see the full Stevia article.

Relaxation Therapies

Although it seems intuitive that relaxation should lower blood pressure, the evidence for the benefits of relaxation therapies for treating hypertension is far from convincing. In a review of 25 studies investigating various relaxation therapies (totaling 1,198 participants), researchers found that those studies employing a control group had no significant effect on lowering blood pressure compared to sham (placebo) therapies.

More specifically, biofeedback is widely advocated for treating hypertension. But, in an analysis of 22 studies, real biofeedback when used alone was found to be no more effective than sham (fake) biofeedback. A subsequent review of 36 trials with 1,660 participants found inconsistent evidence for the effectiveness of biofeedback for treatment of hypertension in comparison to drug therapy, sham biofeedback, no intervention or other relaxation techniques.

However, not all studies have been unsupportive. A review of 9 randomized trials concluded that the regular use of transcendental meditation significantly reduced both systolic and diastolic blood pressure compared to a control. Similarly, an analysis of 17 randomized controlled trials of various relaxation therapies found that only transcendental meditation resulted in significant reductions in blood pressure. Biofeedback, progressive muscle relaxation, and stress management training produced no such benefit. In addition, a trial of 86 patients with hypertension suggested that daily, music-guided slow breathing reduced systolic blood pressure measured over a 24-hour period.

Other Proposed Natural Treatments

The Iranian herb Achillea wilhelmsii was tested in a double-blind trial of 60 men and women with mild hypertension. The results showed that treatment with an A. wilhelmsii extract significantly reduced blood pressure readings. In a double-blind study of 43 men and women with hypertension, use of a proprietary Ayurvedic herbal combination containing Terminali arjuna and about 40 other herbs proved approximately as effective for controlling blood pressure as the drug methyldopa.

Although the research record is mixed, it appears that fish oil may reduce blood pressure at least slightly. Fish oil contains two major active ingredients, DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid). Some evidence suggests that it is the DHA in fish oil, but not the EPA, that is responsible for this benefit.

Several studies have found that glucomannan, a dietary fiber derived from the tubers of Amorphophallus konjac,
may improve high blood pressure. Other forms of fiber may be helpful as well. Milk fermented by certain probiotics (friendly bacteria) may provide at least a small blood pressure-lowering effect.

Growing evidence supports the use of a green coffee bean extract for high blood pressure.

Three preliminary double-blind studies found that chocolate (high in polyphenols) might help mild hypertension. A review including several additional studies drew a similar conclusion.

Numerous studies have found weak evidence that garlic lowers blood pressure slightly, perhaps in the neighborhood of 5% to 10% more than placebo. It remains unclear whether garlic supplements can help patients with high blood pressure safely eliminate or avoid antihypertensive medications.

People who are deficient in calcium may be at great risk of developing high blood pressure. Among people who already have hypertension, increased intake of calcium intake might slightly decrease blood pressure, according to some but not all studies. In an extremely large randomized, placebo-controlled trial involving 36,282 postmenopausal women, 1,000 mg of calcium plus 400 IU of vitamin D given daily did not significantly reduce blood pressure over a 7 year period in women with or without hypertension. Weak evidence hints that use of calcium by pregnant mothers might reduce risk of hypertension in their children.

Study results are mixed on whether magnesium or potassium supplements can improve blood pressure. At most, the benefit is likely quite small.

In a 30-day, double-blind, placebo-controlled study of 39 people taking medications for hypertension, treatment with 500 mg of vitamin C daily reduced blood pressure by about 10%. Smaller benefits were seen in studies of people with normal blood pressure or borderline hypertension. One double-blind study compared 500 mg, 1,000 mg, and 2,000 mg of vitamin C, and found an equivalent level of benefit in all three groups. (Because of the lack of a placebo group, this study cannot be used as proof of effectiveness, only as a demonstration of the equivalence of the doses.) However, other studies have failed to find evidence of benefit with vitamin C. This mixed evidence suggests, on balance, that if vitamin C does have any blood pressure lowering effect, it is at most quite modest.

Unexpectedly, one study found that a combination of vitamin C (500 mg daily) and grape seed OPCs (1000 mg daily) slightly increased blood pressure. Whether this was a fluke of statistics or a real combined effect remains unclear.

Other studies suggest possible benefit with the Ayurvedic herb Eclipta alba (also known as Bhringraja or Keshraja), beta-hydroxy-beta-methylbutyrate (HMB), theanine from black tea, blue-green algae products, chitosan, concord grape juice, garlic, gamma-aminobutyric acid (GABA), various forms of the herb hawthorn, kelp, lipoic acid combined with carnitine, quercetin, Salvia hispanica (a grain), and sweetie fruit (a hybrid between grapefruit and pummelo, high in citrus bioflavonoids). However, the supporting evidence cannot be considered reliable for any of these treatments.

There is mixed evidence on whether soy protein and their associated isoflavones are helpful for blood pressure. A comprehensive review of studies investigating the influence of phytoestrogens (including soy) on blood pressure found no meaningful effect. However, another review found that soy protein alone could significantly reduce blood pressure. See also the section on Herbs and Supplements to Use Only With Caution.

Getting adequate vitamin D may help prevent the development of hypertension.

The vitamin folate may help decrease blood pressure (as well as provide other heart healthy effects) in smokers.
The herbs astragalus, barberry, Coleus forskohlii, hibiscus, maitake, maca, olive leaf; and the supplements beta-carotene, cordyceps, flaxseed oil, royal jelly, and taurine are sometimes recommended for high blood pressure, but as yet there is no meaningful evidence that they work.  

Reducing homocysteine with B vitamins does not appear to reduce blood pressure in healthy people with high homocysteine.  

Researchers have also studied cinnamon’s role in reducing blood pressure. In a randomized study involving 58 people with type 2 diabetes, 2 g of cinnamon daily reduced high blood pressure levels, as well as HbA1c levels (a measurement of blood sugar levels over time).  

One study quoted as showing that a traditional Chinese herbal formula can reduce blood pressure actually failed to find any effect on blood pressure.  

In a review of 26 published studies examining the effectiveness of Tai Chi for high blood pressure, 85% demonstrated a reduction in blood pressure. However, only five of these 26 studies were of acceptable quality. A substantial study (192 participants) failed to find acupuncture helpful for high blood pressure. However, another study, this one enrolling 160 people, did report benefit, but it was small and also suffered from problems in its use of statistics. In a review of 11 randomized controlled trials on the subject, researchers determined that acupuncture’s ability to lower blood pressure remains inconclusive.  

The alternative therapies Hatha yoga, Qigong, and Tai Chi have shown a hint of potential benefit for high blood pressure, the mechanism of action probably being similar for each. A recent review of multiple studies investigating the effectiveness of self-practiced Qigong, for example, concluded that it was more effective at lowering blood pressure than no treatment controls. However, it was no more effective than standard treatments for hypertension: antihypertensive medications or conventional exercise.  

In a 12-week study of 140 men and women with stage I hypertension, chiropractic spinal manipulation plus dietary change did not produce any greater benefit than dietary change alone.  

For many years, the American Heart Association and other major foundations have recommended cutting down on saturated fat and increasing carbohydrates. However, growing evidence suggests that it is preferable to keep carbohydrate levels relatively low while replacing saturated fat with monounsaturated fats such as olive oil. See the article on Low-Carb Diet for more information.  

For a discussion of homeopathic approaches to high blood pressure, see the Homeopathy database.  

Finally, because atherosclerosis is the main harm caused by hypertension, treatments discussed in the Atherosclerosis article should be considered as well.  

**Herbs and Supplements to Use Only With Caution**  

There is one highly credible case report of severe, dangerous hypertension caused by consumption of isoflavones made from soy during the course of a clinical trial on this supplement. This is most likely a rare, highly individual response, but if it could occur with one person, it could occur with another as well.  

As noted above, in one study, a combination of vitamin C and grape seed OPCs mildly increased blood pressure. In another study, use of vitamin E raised blood pressure in people with type 2 diabetes.  

The herb Citrus aurantium (bitter orange) may increase blood pressure. In addition, various herbs and supplements may interact adversely with drugs used to treat hypertension. For more information on this potential risk, see the individual drug article in the Drug Interactions section of this database.
References


22. Sanjuliani AF, de Abreu Fagundes VG, Francischetti EA. Effects of magnesium on blood pressure and intracellular ion levels of Brazilian hypertensive patients. *Int J Cardiol*. 1996;56:177-183.


43. Haji Faraji M, Haji Tarkhani AH. The effect of sour tea (*Hibiscus sabdariffa*) on essential hypertension. *J*
44. Chiu KW, Fung AY. The cardiovascular effects of green beans (Phaseolus aureus), common rue (Ruta graveolens), and kelp (Laminaria japonica) in rats. Gen Pharmac. 1997;29:859-862.


79. Whelton SP, Hyre AD, Pedersen B, et al. Effect of dietary fiber intake on blood pressure: a meta-analysis of


97. Watanabe T, Arai Y, Mitsui Y, et al. The blood pressure-lowering effect and safety of chlorogenic Acid from


100. Macklin EA, Wayne PM, Kalish LA, et al. Stop hypertension with the acupuncture research program (SHARP). Results of a randomized, controlled clinical trial. Hypertension. 2006 Oct 2. [Epub ahead of print]


