

# Natural Approaches to Mitigating Hypertension

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**H**ypertension is one of the greatest health care problems facing today's world with 50 million North Americans suffering from this often-silent killer. Elevated blood pressure is a known risk factor for heart attacks and strokes along with excess wear and tear throughout the body and hypertension is the foremost cause of unexpected death. Hypertension also contributes to comorbidity in individuals with diabetes: More than 73 percent of people with diabetes also have elevated blood pressure.<sup>1</sup>

One of the most challenging aspects of treating a patient with hypertension is that the majority of cases of hypertension are categorized as essential hypertension, that is, the condition's cause is not readily identifiable. Thus, clinically deciding which of the multiple drug therapies that are most apt to help a given patient is as much art and as it is clinical protocol.

The numerous conventional options to help a patient control hypertension include the following well-known interventions: diuretics; angiotension-converting enzyme inhibitors; calcium-channel blockers; and beta-blockers. Alternative approaches that use natural therapies are equally as varied and they include botanicals, nutraceuticals, diet and lifestyle interventions.

The first intervention for hypertensive treatment common to all fields of medicine is to incorporate diet and lifestyle changes, such as increased exercise, increased consumption of magnesium and potassium, and a low-sodium diet. Beyond these first steps to set the foundation, the realm of specific supplementation protocols are individually customized and frequently include coenzyme Q10 (CoQ10), hawthorn (*Crataegus* spp.) berry extract, olive (*Olea europaea*) leaf extract, garlic (*Allium sativum*), coleus (*Coleus forskohlii*), and L-arginine.

Clinical practice routinely demonstrates that a multifactorial approach of lifestyle changes combined with appropriate supplements can make a significant impact on hypertension. The "bottom line" when creating a therapeutic intervention for a patient who has hypertension is to achieve a normotensive state safely with as few side-effects as possible, while supporting overall cardiovascular health in a manner that is sustainable for a lifetime.

## Diet and Lifestyle Changes

Dietary and lifestyle interventions, without question, are the most challenging with regard to compliance for all patients. However, tackling the very patterns of behavior that have contributed to onset of a disease state is essential when reestablishing a health promoting homeostasis.

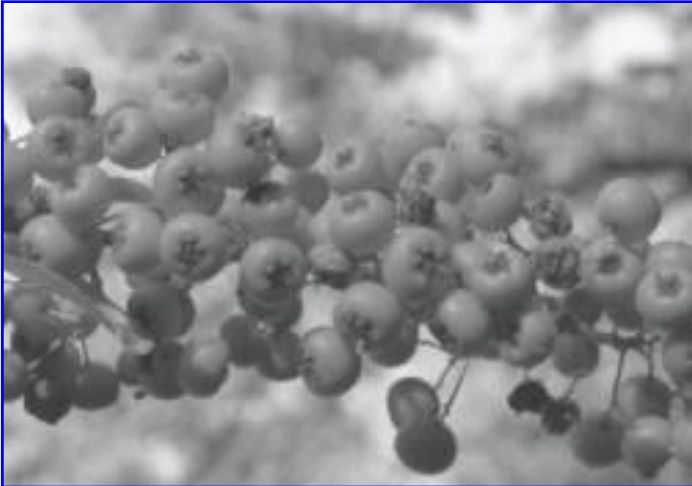
The maintenance and protection of the 60,000 miles of blood vessels that include 18,000 miles of capillaries are governed by what a person eats and how much that person exercises. Both a healthy diet and a consistent exercise routine are important keys to preventing and controlling hypertension.

In a randomized and multicenter study, published in 2004, of more than 800 patients, the group that were involved in increased physical activity, weight loss, and decreased sodium and alcohol intake had their baseline rate of hypertension cut by more than half.<sup>2</sup> Moreover, a recent epidemiologic study assessing the contribution of Western society's common risk factors in hypertension found that physical inactivity makes the largest contribution to risk of developing hypertension, though high sodium and low potassium intake each contributed a significant risk, as did low magnesium intake.<sup>3</sup>

As difficult as it is to help patients change their behavior, the time practitioners invest in constructing specific exercise plans, discussing particular fruits and vegetables that patients find appetizing and would be likely to incorporate into their diets, and recommending salt restriction, is all time well-spent.

Frequently, the role of an effective practitioner is that of a "motivational health coach," providing powerful treatment tools to share with patients and combining these tools with educational facts that can empower patients to change. Thus, as a patient learns about the consequences both good and bad parts of personal life choices, the more likely he or she is likely to make changes.

For example, illustrating the importance of achieving an optimal lean body mass with facts and figures can make a goal more tangible. When a patient comes to realize that the capillary beds within the body while at rest contain a mere 5 percent of the blood volume yet contribute to 27 percent of peripheral resistance (explained in intelligent lay terms), this can serve a motivational pivot because the loss of 1 pound can equate to the



Hawthorn (*Crataegus* spp.).

loss of 250 miles of blood vessels thus lowering the resistance that the heart must pump against and the resultant blood-pressure change.

In addition, a patient with an average heart rate of 72 beats per minute, can be educated on the importance of properly fueling the cardiovascular system by learning that the heart that weighs a mere 10 ounces yet contracts approximately 100,000 times per day.

### Coenzyme Q10

Coenzyme Q10 (CoQ10), one of the better-studied supplements with regard to hypertension also plays a crucial role in energy protection and performance of the myocardium. The clinical literature reports on the hypertensive benefits of CoQ10 go back as early as the mid 1970s, with an early study on 5 patients with essential hypertension who also had deficient activity of the CoQ10-dependent enzyme, succinate dehydrogenase-CoQ10 reductase.<sup>4</sup> Four (4) of the 5 patients experienced significant reductions in blood pressure when given CoQ10 for 3–5 months.

In a more recent trial, 26 patients with essential hypertension were given 50 mg of CoQ10, 2 times per day for 10 weeks.<sup>5</sup> At the end of the 10 weeks, the subjects' average systolic blood pressure had dropped from 164 mmHg to 146 mmHg, and their average diastolic blood pressure had decreased from 98 mmHg to 86 mmHg, a significant and relevant decrease. As an indication of this supplement's effect on total heart health, total cholesterol decreased from about 223 mg/dL to 213 mg/dL, while their average high-density lipoprotein (HDL) increased from approximately 41 mg/dL to 43 mg/dL.

Several other studies corroborate the effectiveness of CoQ10 for reducing blood pressure. In an observational study of 109 patients seen in a private cardiology practice and who had essential hypertension, the patients added an average of 225 mg per day of CoQ10 to the antihypertensive medications they were already taking.<sup>6</sup> The dose of CoQ10 was adjusted individually according to the subjects' responses and, as needed, the pharmaceuticals in the patients' hypertensive regimens were altered.

In this study,<sup>6</sup> not only was the New York Heart Association functional class significantly improved in these patients—51 percent were able to discontinue from one to three of their other antihypertensive medications over the course of several months.

Furthermore, a randomized double-blinded trial on 59 patients already receiving antihypertensive medications also showed reductions in systolic and diastolic blood pressures when they received CoQ10.<sup>7</sup> In this study's CoQ10 group there were also reductions in plasma insulin, glucose, and triglyceride levels, as well as an increase in HDL, suggesting the appropriateness of CoQ10 for patients with diabetes and metabolic syndrome who also have hypertension.

Finally, researchers who did a randomized, double-blinded, placebo controlled trial on CoQ10 in 82 patients with isolated systolic hypertension found that, over 12 weeks, subjects who consumed 60 mg of CoQ10, 2 had an average drop of  $17.8 \pm 7.3$  mmHg.<sup>8</sup> What is clinically noteworthy is that, although CoQ10 frequently works well as an isolated therapy, combining it with allopathic regimens often provides synergistic benefits as well. In addition, CoQ10 and L-carnitine have also produced improved clinical benefit for patients with a number of cardiovascular maladies, which was likely, in part, the result their combined role in supporting adenosine triphosphate production and myocardial energy performance.

### Hawthorn

There are several other supplements that may well be useful for controlling hypertension, although the level of research evidence may not yet be as great as the level of their use among alternative and complementary medicine practitioners. Several species of hawthorn have garnered some research interest.

In a recent double-blinded study of Iranian *C. curvisepala*, 92 subjects took either the hawthorn extract or placebo for more than 4 months and this produced significant drops in both systolic and diastolic blood pressure 3 months into the study.<sup>9</sup> An additional pilot study showed a favorable trend toward reduced hypertension for hawthorn extract but the results did not reach statistical significance.<sup>10</sup>

Traditionally, this herb has been used as a heart tonic, and is used extensively for patients with chronic heart failure. What is important to note is that, in the practice setting, the full benefits of hawthorn in the proper dosages may take approximately 6–8 weeks to be clinically observable.

### Olive Leaf Extract

Olive leaf extract is another of several botanicals with antihypertensive effects. Given orally to rats predisposed to hypertension and exposed to a hypertensive drug, olive leaf extract prevented rises in blood pressure over 8 weeks in a dose-dependent manner.<sup>11</sup> The antihypertensive effects from this plant or its subspecies are probably the result of triterpenoids that have been demonstrated to act as beta-adrenergic antagonists.<sup>12</sup>

Because of this action, it is not advisable for olive leaf extract to be recommended concurrently with pharmaceutically produced beta-blockers unless a patient is being monitored very

carefully. With regard to beta blockers, there is some evidence that beta-blockers themselves can have an antagonistic effect, inasmuch as they may impair the utilization of innately produced CoQ10.

### Garlic

Garlic is another food–botanical with mild antihypertensive effects. A meta-analysis of studies using dried garlic powder does suggest that this form of garlic supplementation may lead to a significant drop in both systolic and diastolic pressures, although larger studies would be welcome.<sup>13</sup>

One specific study on 47 patients over 12 weeks showed that the subjects who took the garlic powder had a drop in supine diastolic pressure from an average of 102 mmHg to 91 mmHg over 12 weeks.<sup>14</sup> In addition to a drop in blood pressure, there were also significant reductions in cholesterol and triglyceride levels. Thus, it appears that garlic, like CoQ10, may lead to an overall improvement in cardiovascular function that results in lowered blood pressure.

### Coleus

Another herb, traditionally used in India for its antihypertensive effects is coleus. Coleus contains diterpenes that may have antihypertensive actions.<sup>15</sup> One of these, forskolin, is a molecule that acts directly on adenylyl cyclase and leads to increased intracellular levels of the second messenger cyclic adenosine monophosphate (cAMP).<sup>16</sup> This, in turn, may lead to a cAMP-induced vasodilation and result in lower blood pressure. Some clinical experience with this herb indicates that about 540 mg per day of an extract standardized to 10 percent forskolin may have an antihypertensive effect in some people; at this dose, it is also not unusual for loose bowel movements to occur.

### L-Arginine

Finally, the amino acid L-arginine is gaining interest as an antihypertensive agent, because of its increase in nitric oxide production. In one study on 13 patients with hypertension and angina, L-arginine, taken at 2 g, 3 times per day led to improvement of resting systolic blood pressure, reduction of angina symptoms, and better quality of life; all were considered to be significant.<sup>17</sup>

In another study on patients with both hypertension and diabetes, patients were given 3 g of L-arginine every hour for 10 hours over 2 days and this produced a drop in systolic blood pressure of about 12 mmHg and a drop in diastolic blood pressure of about 6 mmHg.<sup>18</sup> These effects were reversed within hours of L-arginine cessation. As it is impractical to take L-arginine orally every hour, a t.i.d. dosing schedule of 2–5 g may be attempted, or a time-release product utilized. An additional benefit of L-arginine therapy is that its ability to vasodilate can also help support better erectile functioning that often becomes compromised with long term circulatory disease.



Garlic (*Allium sativum*).

### Conclusions

There are numerous natural medicine therapeutics that can be particularly effective to help control mild-to-moderate hypertension. It is noteworthy that combined allopathic and naturopathic approaches can often help lessen the need for high-dose conventional drug therapy, and/or can help offset some of the side-effects of such therapy.

While no option in itself may be completely sufficient, several of the above reviewed supplements used together and combined with consistent lifestyle changes, such as increased exercise, increased potassium and magnesium intake, and lowered sodium intake, will often lead to substantial reductions in hypertension. □

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