

 TRACK YOUR PLAQUE  
SPECIAL REPORT



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**Warning: Normal blood pressure may be high blood pressure!**

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*Widely misunderstood, underestimated, under-treated, and ignored, blood pressure is a prime instigator of coronary plaque growth. Although most people regard blood pressure issues as dull and not worthy of fuss, control of this incredibly important facet of health is a basic requirement for atherosclerotic plaque control and putting a halt to an increasing heart scan score.*

*The one sure thing about politics is that what goes up comes down  
and what goes down often comes up.*

*- Richard Nixon*

Alas, if only blood pressure were as decipherable to most of us as politics. High blood pressure can be imperceptible, insidious, and sometimes just plain inscrutable. Like exposing a venereal affliction in broad daylight, people deny having high blood pressure. "I'm nervous", "I fought traffic to get here," or "Wait until I relax a little while and it'll come down," are common reactions of those advised their pressures are high.

High blood pressure is destined to affect the majority of Americans. Succumb to popular food and exercise patterns and high blood pressure is as inevitable as death and taxes. Even if you're non-hypertensive at age 55, the Framingham Heart Study predicts a 90% likelihood you'll be hypertensive in your lifetime.

Surprisingly, conventional blood pressure treatment does not fully eliminate the risk of cardiovascular events from hypertension (JNC–VII 2003). In other words, threats to health from high blood pressure remain uncorrected even when blood pressure is fully controlled by medication (when conventional blood pressure targets are reached).

Like changing the oil in your car, proper management of blood pressure is a necessary prerequisite to obtaining full control over coronary plaque. You can baby your car, wax it, lube and tune it, but neglect oil changes and you'll never get full life out of your car. In the same way, blood pressure control is a basic and absolute requirement in your plaque control program. You will not stop the progression of your heart scan score without seizing control over blood pressure.

Too often, a conversation about hypertension in the doctor's office degenerates into a mandate for prescription medication once the obligatory comments about a healthier diet, reducing salt intake, and stopping smoking are out of the way. But there's lots more you can do to help gain better control over blood pressure and the need for medication.—sometimes eliminate—reduce

## **Progress in hypertension: From bloodletting to nitric oxide**

In the late 19th century, Dr. Carl Ludwig first devised a technique for measuring blood pressure that required the insertion of a tube into an artery, allowing blood to flow into a manometer. It wasn't until the turn of the 20th century that a sphygmomanometer appeared on the scene that didn't require puncturing a vessel, and was therefore useful for everyday purposes. In 1912, the Massachusetts General Hospital required blood pressures on all persons admitted to their wards.

In Ludwig's day, bloodletting was a popular treatment to reduce high blood pressure. As recently as the 1970s and 1980s, hospital wards were packed with patients suffering uncontrolled, perilous levels of hypertension ("hypertensive crises") due to the failure of the medical community to recognize and treat earlier phases of high blood pressure. Treatment choices were, likewise, limited and flawed. (Remember medications like methyldopa (Aldomet) and minoxidil?)

The understanding of blood pressure has advanced considerably since these early observations. Today, medicines have improved, though they're certainly not foolproof. But even better, breakthroughs in the science of blood pressure regulation are unearthing myriad nutritional possibilities that may help you gain control or prevent your struggles with high pressure. Among the most exciting recent insights revolve around the

role of nitric oxide, a master controller of blood pressure, and the frightfully common metabolic syndrome, an eminently correctable factor in blood pressure control.

## **What is normal blood pressure?**

In the 1960s and 70s, crazily arbitrary guidelines were followed by the medical profession that permitted gross under-appreciation of hypertension. Remember the rule, practiced in the 1970s, that “allowable” blood pressure was  $100 + \text{age}$ ? By this formula, a 60 year old would be permitted a blood pressure of 160. We all know now that a blood pressure like this virtually guarantees complications of high blood pressure like stroke, dementia, and kidney failure within a few short years.

Why the confusion? Blood pressure is variable. In the morning, just before arising, maybe your blood pressure is 104/78. Eat breakfast, have coffee, and your blood pressure is 128/74. Sit at your desk at work, have another cup of coffee, answer e-mails, take some phone calls, and you’re now at 149/79. Eat lunch, perhaps overeat, sit back down: 140/64. A really annoying comment from a customer, blood pressure now: 164/68. Blow off steam with a friend, walk 200 feet to another part of the building, look at the picture of your family on your desk and remind yourself that there’s more to life than work; pressure now 130/70.

Nobody’s blood pressure is locked at a steady 120/80. Blood pressure fluctuates widely, even in a person with absolutely normal pressures. People without high blood pressure will, in fact, fluctuate into clearly abnormal ranges at times during periods of emotional stress, overindulgence in unhealthy foods or alcohol, and physically demanding activities. This does not mean they have high blood pressure.

Then how do you identify high blood pressure if people with normal blood pressure occasionally trespass into high pressures?

High blood pressure does not necessarily mean constantly and persistently high. People with high blood pressure fluctuate more widely. Differences of 60-80 mm within just a few minutes are common. The “give me a few minutes to calm down” comment that allows blood pressure to drop from 180/80 to 120/80 simply reflects this phenomenon in a hypertensive individual. High blood pressure also stays higher longer and does so more frequently. In other words, the peaks and valleys of blood pressure are higher and broader, and there are more of them.

One practical way to gauge overall blood pressure behavior is to wear an ambulatory blood pressure monitor, a device worn for 24 hours that automatically takes blood pressure and records it, usually every 15 minutes. The figures are saved for later review.

Another way is a stress test, since graded exercise's effects on your blood pressure can be observed while you walk a treadmill. Both tests show the extremes of your blood pressure fluctuations and provide a pretty good idea of whether you truly have high blood pressure under everyday provocative settings.

The last choice is to simply measure your blood pressure the old fashioned way, while sitting in your doctor's office. But you can improve on this by adding measures of your own (with an automatic blood pressure cuff or measured by a friend) at different times and under varied influences, such as at home, upon awakening, following exercise, etc. This provides a reasonable gauge of your blood pressure's fluctuations. But expect variation whether or not you have high blood pressure! That's part of being human.

Another reason for confusion is blood pressure's "silent" nature. Only occasionally does high pressure yield symptoms like headache or fatigue. The vast majority of us feel just fine. Perhaps that's why we argue and resist when high blood pressure is found: "Just let me relax and take it again in a few minutes!" But high blood pressure will yield symptoms only when it attains dangerous levels with damaging effects on organs. The time to take action is before symptoms develop.

## **The ebb and flow of blood pressure**

What exactly is blood pressure? Put simply, it is the force with which blood is propelled through your arteries. Unlike a river, which flows continuously downstream, blood flow is pulsatile, with the ebb and flow driven by pumping heart muscle. The heart muscle squeezes forcefully, propelling blood forward. The heart then relaxes and flow ebbs momentarily. This cycle repeats itself 60 or so times each minute, every time your heart beats.

Blood pressure is, therefore, the pressure contained within your arteries, with a forward burst of flow from heart contraction (systolic contraction) called systolic pressure (the top number of blood pressure), and the receding flow of heart relaxation called diastolic pressure (the bottom number).

You can deduce many causes of high blood pressure by understanding this basic process. For instance, pour a greater volume of fluid into the system, and systolic pressure goes up because each contraction of the heart delivers greater volume, and diastolic pressure goes up because there is more volume filling the arteries and less room to dissipate pressure during relaxation. Several disorders cause fluid retention in your circulatory system and thereby cause high blood pressure, such as excessive salt intake, poor kidney function, and high levels of certain hormones like renin, angiotensin, and cortisol.

Another factor is reduced flexibility or stiffness of arteries. Normally, arteries are flexible and “give” with pulsatile blood flow. When stiff, however, vessels are less able to expand with bursts of flow, and pressure increases. This is common in arteries lined with semi-rigid atherosclerotic plaque (often appropriately called “hardening of the arteries”).

Regardless of the cause, all forms of high blood pressure eventually lead to the same undesirable results. High pressure pounds your organs with each heart beat, hour after hour, day after day. Over the years, the effects of this relentless trauma begin to show. In the kidney, the ability to filter body waste products and fluid from blood weakens. Heart muscle becomes overly thick and muscular, internal heart pressure increases and you become breathless and retain fluid. The arteries of the chest and abdomen, particularly the aorta, the major artery of the body, develop plaque. The aorta enlarges, essentially “inflating”, under the increased internal pressure of hypertension, leading to aneurysm formation. In the brain, the relentless pounding of high blood pressure damages brain tissue, eventually leading to dementia (“multi-infarct” dementia from many “mini-strokes”). In the heart, coronary arteries develop plaque that leads to heart attack.

## **Maybe normal blood pressure is too high!**

*We have taken it as the natural human condition that blood pressures are as high as they are. We have arbitrarily defined “normal blood pressure”. But that does not mean that normal is optimal.*

Dr. Henry R. Black of Rush University Medical Center  
Member of panel for national blood pressure guidelines, speaking for the NY Times

At what point does blood pressure begin to wreak demonstrable effects on death and cardiovascular complications? A systolic pressure of 150? How about 140?

Measurable complications of blood pressure begin at 115! Systolic pressures above 115 are sufficient to generate damage to arteries and other organs such that, over several years, increased death and disease can be measured (Prospective Studies Collaboration 2002).

Every increment in blood pressure of 20/10 doubles the risk of cardiovascular disease. For this reason, the most recent national guidelines for blood pressure issued by the

National Health, Lung, and Blood Institute recommend maintaining systolic blood pressure <120, diastolic <80, a huge change over the previous cut-off of 140/90. The new guidelines also provide for a category called “pre-hypertension,” meaning blood pressures of 120–139 systolic, 80–89 diastolic, that justify lifestyle modification for improvement. (JNC–VII 2003).

The recent release of the Camelot Study conducted by Dr. Steve Nissen of the Cleveland Clinic has fueled the argument that blood pressure should be lower. In this study of nearly 2000 participants (all of whom had coronary disease), reducing blood pressures from the “normal” range of 129/78 down to 124/76 led to significant reductions in heart attack, death, and hospitalization. It also permitted less plaque growth when patients’ arteries were examined with intracoronary ultrasound (Nissen SE et al 2004). It’s irresistible to wonder what would have happened had blood pressures been lowered to 100, and perhaps future clinical trials will answer this question for us.

## **Hypertension—Epidemic of the 21st century**

Take a look down the aisles of your grocery store and you’ll see why 47 million adults in the U.S., or 1 of every 4, have the combination of features dubbed the “metabolic syndrome.” Ninety percent of the products on the supermarket shelves are highly processed foods, rich in unhealthy fats, loaded with sugar, and depleted of fiber. Combined with inactivity, sleep deprivation, and stress, and you create a constellation of physiological phenomena that includes abdominal obesity, low HDL cholesterol, high triglycerides, increased blood sugar, and high blood pressure. So many adults in the U.S. meet the diagnostic criteria for metabolic syndrome that the total number now afflicted nearly equals the number of “baby boomers” in the U.S (Ford ES et al 2002).

If you have hypertension, there’s a 50:50 chance that you have at least some of the characteristics of the metabolic syndrome, particularly resistance to insulin that precedes development of full-blown diabetes. In fact, the association is so strong that hypertension should be regarded as a significant risk factor for future diabetes, with a 200–300% increased risk of diabetes in your future (Sowers JR et al 2001).

To remind ourselves of what blood pressure should be, we need only look at the blood pressures in primitive cultures who lack access to convenience foods, processed foods, and who engage in physical activity much of their day. People in these cultures, who rarely succumb to cardiovascular disease (their health problems are different, often infectious diseases), have blood pressures of around 90/60. Like violence in the media, we’ve all become numbed to the idea of high blood pressure.

## The key to hypertension: Seize control of the metabolic syndrome

Metabolic syndrome is by far and away the leading trigger for hypertension in our time. It is a very correctable cause. Seizing hold of the metabolic syndrome can provide a tremendous upper hand in blood pressure control. The most confident way to regain control of the multi-faceted metabolic syndrome is to lose weight.

There are many ways to lose weight, of course. People with metabolic syndrome respond especially well to diets that restrict carbohydrates and/or make “glycemic index” a priority (i.e., recommend foods that blunts blood sugar release). Several low carbohydrate diets are popular now, largely due to the exaggerated success of carbohydrate restriction in a world overrun with metabolic syndrome (Stern L et al 2004). These diets come in a variety of names and packages, such as the Atkins’ diet, the South Beach diet, the Zone diet, the DASH diet, and several others. If you succeed in losing weight on any of these programs, you will very likely enjoy dramatic drops in blood pressure, as well, frequently enough to reduce blood pressure 10–40 points (systolic) and even trim your list of medications. (Work with your doctor, of course, if you are already on blood pressure medication.)

If you are contemplating one of these diets but would like to accelerate your weight-loss and metabolic control efforts, here’s a list of supplements and strategies that can boost your success:

**Inulin** is a fiber found in celery, green peppers, and other vegetables that avidly absorbs water and swells to many times its original size. This causes you to feel full and push food away. Inulin comes conveniently in an easy-to-take new preparation available in many pharmacies and department stores called Fiber Choice. The Weight Management version of Fiber Choice has added green tea extract. We’ve used two (chewable) tablets one hour prior to each meal effectively. Contrary to the product label, we find it works better with a large glass of water to increase its swelling effect in the stomach. One side effect: lots of gas.

**Glucomannan** is another unique fiber that soaks up substantial quantities of water. When taken as a capsule, glucomannan provides a gastric bypass-like effect of filling the stomach and yielding satiety signals. The result is that you eat less. Glucomannan, 2000–4000 mg, is best taken one hour before meals with plenty of water. (Constipation can result if you fail to drink sufficient water.) People using glucomannan alone and without a specific diet program generally lose 4-7 lbs. per month (Walsh DE et al 1984; Vuksan V et al 2004).

**White bean extract** can accelerate weight loss, particularly if you have a low HDL/high triglyceride pattern. One thousand mg twice per day with meals can lead to 3–4 lbs. of weight loss over the first month through white bean extract's property of blocking carbohydrate absorption by 66%. Occasionally, some people will experience gas or mild bloating, but white bean extract generally imposes minimal side-effects (Udani J et al 2004).

**DHEA** Until recently, the data behind DHEA and weight loss have been inconclusive, some studies demonstrating benefit, others failing to show any difference. However, a recently reported well-conducted study at Washington University in St. Louis described dramatic results in a group of 56 participants aged 65–78. DHEA, 50 mg at bedtime over

six months, yielded a significant reduction in abdominal fat of 10.2% in females, 7.4% in males, measured with abdominal MRI. Along with loss of abdominal fat, there was marked improvement in sensitivity to insulin. The comparison placebo group experienced an increase in abdominal fat, and sensitivity to insulin deteriorated during the same period (Villareal DT et al 2004). Though more data are needed, this study argues in favor of DHEA to accelerate weight loss, achieved in such a way as to improve fat distribution and sensitivity to insulin. See [DHEA: What role in your program](#) on the [Track Your Plaque](#) website.

**Calcium pyruvate** is a fascinating supplement that can be useful in two ways: it accelerates weight loss, usually resulting in a few extra pounds of weight loss over several weeks; it also has the interesting property of making exercise easier and more enjoyable, allowing you to exercise longer and harder with faster recovery. Most people get full effects with a dose of 2500–3000 mg twice a day, with one dose 30 minutes prior to exercise. Despite its weight-loss accelerating effect, calcium pyruvate is not a so-called “thermogenic” agent that accelerates metabolism like ephedra, and shares none of the hazards of these agents (Kalman D et al 1999).

**Green tea**, either as theaflavin (750–1000 mg per day) or brewed green tea (approximately 7 cups per day) yields modest weight loss (Diepvens K et al 2006). We've had best results with the Fiber Choice product (above) which combines green tea extract with the soluble fiber, inulin.

Just how far you'll have to go in weight loss to shut off the effects of the metabolic syndrome on raising blood pressure is an individualized decision that needs to be made by you and your doctor. Virtually all of parameters defining metabolic syndrome improve with weight loss—HDL goes up, triglycerides go down, inflammation subsides, sensitivity to insulin increases and blood pressure drops. Some people will experience dramatic improvement in all measures with just a modest 10 lb. drop in weight, while others may need to lose significantly more, depending on how overweight you are to begin with and your genetic profile.

## Nitric Oxide—Master controller of blood pressure

High blood pressure signifies that there is an abnormal tendency for the arteries of the body to constrict. This is true of arm and leg arteries, brain arteries, heart arteries, other arteries head to toe. Correct this abnormal effect and perhaps we've struck a goldmine in blood pressure control.

This insight dates back to 1980, when Dr. Robert Furchgott of the State University of New York conducted experiments on rabbit arteries, trying to decipher how arteries control tone, or their state of constriction. Entirely by accident, he noticed that arteries constricted when their inner lining was removed. Dr. Furchgott theorized that the inner

lining, or endothelium, was necessary to permit the normal dilating behavior of arteries and that a damaged endothelium prevented this phenomenon. A furious effort was sparked to identify the factor or factors produced by the endothelium that governed relaxation. Dr. Furchgott originally called this mysterious substance "endothelium-derived relaxation factor" or EDRF. For several years, identification of EDRF proved elusive, as it persisted for a mere few seconds before disappearing. In 1986, EDRF was discovered to be nitric oxide. This first invited skepticism, as nitric oxide is a common gaseous by-product of nitrogen combustion, plentiful—of all places—in automobile exhaust. How could it be the critical cellular messenger controlling arterial tone?

This discovery has endured intense scrutiny and resulted in the Nobel Prize for Medicine in 1998, awarded to Dr. Furchgott, and to Drs. Louis Ignarro and Ferid Murad for their related work. Nitric oxide is now recognized as the signaling molecule for many human processes and is the single most powerful artery dilating agent known (Furchgott, R. F., and Zawadzki, JV 1980; Ignarro LJ et al 1999).

*We now know that the endothelium exerts tremendous control over blood flow. First, its prime location plays a role. Because the endothelium is the inner most lining of the blood vessel, it has direct contact with blood and, as such, serves as an interface between the blood and the vessel wall... We now know that this delicate tissue, only one cell layer in thickness, is a dynamic factory, producing a myriad of substances that maintain vessel health. It is, in essence, a silver lining—since when it's healthy, it produces its own forms of heart medicine.*

Dr. John Cooke  
Stanford University

Because of its extremely short life of no more than 10 seconds, a constant supply of nitric oxide is needed to keep arteries dilated and relaxed. Any drop in nitric oxide production and arteries constrict. Cholesterol abnormalities, high blood pressure, inflammation, high blood sugar or diabetes, metabolic syndrome, a high-fat diet, and sugary, refined foods, all impair endothelial cells' ability to produce nitric oxide. This leads to repeated damage to the lining of the arteries and triggers atherosclerotic plaque formation. This is called "endothelial dysfunction." When arteries are lined with plaque, even a microscopically thin layer, they are less able to produce nitric oxide, yielding even more injury.

How can situations as unrelated as diabetes, high fat foods, and inflammation all disrupt the endothelium's control over arterial relaxation? These conditions all share an excess quantity of the potent, abnormal constrictor of arteries called asymmetric dimethylarginine, a compound that mimics the structure of the amino acid, L-arginine, but blocks the conversion of L-arginine to arterial-relaxing nitric oxide. Blood levels of asymmetric dimethylarginine can balloon to 10 times normal levels (Cooke JP 2000). Much of the research in this area is due to the work of Stanford investigator, Dr. John Cooke. Among Dr. Cooke's breakthrough discoveries is that asymmetric dimethylarginine is responsible for abnormal arterial constriction, or endothelial dysfunction, in situations involving high cholesterol, high blood pressure, high triglycerides, diabetes and insulin resistance, high homocysteine, and when atherosclerotic plaque is present (Cooke JP 2004). (Dr. Cooke describes his work in detail in his book, *The Cardiovascular Cure*, Broadway Books, 2002.) Dr. Cooke has labeled asymmetric dimethylarginine the "über marker, a biochemical factor mediating the adverse vascular effects of many other risk factors and markers."

Several prescription drugs increase availability of nitric oxide, including the angiotensin-converting enzyme class of blood pressure medication, the statin drugs, and estrogen. These observations have led to the question of whether L-arginine would serve as an anti-hypertensive agent, and reported experiences show that L-arginine reduces blood pressure. It can be especially effective in situations where endothelial dysfunction and nitric oxide deficiency are at work, such as when high blood pressure accompanies high cholesterol, diabetes, kidney disease, and other situations (Palloshi A, et al 2004; Paiva H et al 2004). L-arginine can be a powerful tool to reduce blood pressure, though the magnitude of reduction varies depending on the degree of endothelial dysfunction present. Most people will enjoy drops in blood pressure of between 10 and 20 mm Hg systolic, 5–10 mm Hg diastolic.

L-arginine can be found in many protein foods, especially meat, nuts, and dairy products. The average American ingests around 5.4 grams (5400 mg) per day, so L-arginine is nothing new to your body. Supplemental L-arginine allows you to correct low

levels of L-arginine and overcome the competitive effects of asymmetric dimethylarginine to supply additional nitric oxide to dilate your body's arteries (Wu G et al 1998).

The dose that we have used successfully is 3000–6000 mg twice per day, preferably taken at times when your stomach is empty (e.g., before breakfast and at bedtime). Doses like this are best taken as powders, rather than capsules, mixed with water or a non-protein liquid, such as fruit juice.

## **What about anti-oxidants?**

Hypertension from a deficiency of nitric oxide can also be produced experimentally through the introduction of a variety of oxidative molecules, such as superoxide, which disables nitric oxide by forming peroxynitrite, a potent constrictor of arteries (Taddei S et al 2001). This opens the whole question of whether anti-oxidants might also lower high blood pressure by blocking peroxynitrite formation and restoring endothelial capacity for nitric oxide production.

Vitamin C has served as the prototype anti-oxidant in a number of clinical trials. Thus far, the experience with vitamin C has been mixed, with some studies showing drops in blood pressure, others showing no effect (Thomas GD et al 2001). An encouraging report from the West Australian Institute for Medical Research examined the anti-hypertensive effects of vitamin C 500 mg per day, grape-seed polyphenols (i.e., grapeseed extract, a source of flavonoids), or the two combined. When each was administered separately over six weeks, neither yielded any significant reduction in blood pressure. However, when vitamin C and grape-seed polyphenols were combined, there was a 5 mm drop in systolic pressure, 3 mm drop in diastolic pressure (Ward NC et al 2003). This is consistent with the suspicion that other investigators have expressed that flavonoids and anti-oxidants should be used in combination, not individually, to achieve full effect. Conceivably, the appropriate combination would be maximally effective in restoring arterial nitric oxide and thereby exert significant blood pressure reducing effects. This data is likely to unfold over the next several years, as the understanding of the basic science behind anti-oxidants and nitric oxide evolves. Data on combining L-arginine and anti-oxidants will be especially useful.

The one anti-oxidant that stands out by itself for reducing blood pressure is coenzyme Q10 (CoQ10). Eight studies have now examined coenzyme Q's effects on blood pressure, and the pooled data show an impressive average drop of 16 mg Hg in systolic pressure, 10 mg drop in diastolic pressure with CoQ10 (Rosenfeldt F et al 2003). (Doses studied ranged from 50-200 mg per day.) Recent reports have suggested that lowering blood pressure is not enough to eliminate high blood pressure's contribution to

cardiovascular complications like death and heart attack. Reduction of abnormal heart muscle thickening, or “hypertrophy” (measured by ultrasound), may also be a necessary aspect of treatment (Devereux RB et al 2004). This effect is not accomplished by all prescription anti-hypertensive medication. Interesting data from the University of Texas-Austin suggests that abnormal hypertrophy resulting from high blood pressure can be substantially regressed with CoQ10 treatment (Langsjoen PH et al 1993; Langsjoen PH et al 1994).

## Conclusion

A truly normal blood pressure of  $\leq 120/80$  is a basic requirement to gain control over coronary plaque growth. If your hope is to stop your heart scan score from increasing, then you will need to maintain blood pressure at or below this range. “Borderline” high blood pressure is commonly treated lightly until complications of high blood pressure make their appearance. It is far better to correct blood pressure, even “borderline”, before ill-effects are given a chance to develop.

The booming prevalence of the metabolic syndrome has made it an increasingly important contributor to hypertension. Metabolic syndrome is a controllable, largely correctable, process. Weight loss is the principle means to regain control over this process, and results in substantial improvement in blood pressure along with it. Several dietary and supplement strategies are available that can accelerate your success in improving the patterns associated with metabolic syndrome and reduce blood pressure.

Nitric oxide is a master controller of blood pressure. Deficiencies of nitric oxide, or a powerful inhibitor of its production, asymmetric dimethylarginine, leads to hypertension in a variety of situations such as high cholesterol, excessive inflammation, high homocysteine, and many others. Supplemental L-arginine can help drive nitric oxide availability and contribute to blood pressure control.

Research in anti-oxidation is opening some promising avenues for nutritional supplementation to reduce blood pressure by reducing blood vessel constrictors like the oxidant peroxynitrite. More data are needed, but coenzyme Q10 is the one anti-oxidant with sufficient solid data to support its use as an effective means of reducing blood pressure.

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