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*Taking nutrition from daunting to doable<sup>SM</sup>*

## Food & Nutrition

# Food-as-Protection and the Fight Against Hypertension

When it comes to controlling blood pressure, dietary recommendations tend to focus on what not to eat. However, also emphasizing which foods to eat more of offers a positive and encouraging approach for patients and provides even better protection against hypertension.

From examining total dietary patterns to honing in on which specific foods, nutrients and compounds potentially offer the most benefits, this "food as protection" perspective is at the center of many studies on preventing or managing hypertension. Tweet this



### Identifying Potential Protectors

For example, while potassium is often lauded for lowering blood pressure — and in some short-term trials, increasing potassium intake did counteract blood pressure elevation in response to dietary sodium — there currently is not enough evidence to support dietary potassium specifically to reduce blood pressure. However, potassium has not been ruled out entirely, especially in a synergistic role when combined with other elements of a healthy diet.

Magnesium may act through several mechanisms to reduce blood vessel constriction. This shows potential, but for now, observational studies and clinical trials are too inconsistent to define a link between dietary magnesium and blood pressure and support its inclusion in major cardiovascular recommendations.

Controlled human intervention studies show nitrates can improve endothelial function, promote vasodilation and reduce blood pressure even in the relatively small amounts achievable in a healthy diet. Nitrates convert to nitric oxide in the body, and research suggests nitric oxide is a potent vasodilator essential for blood vessel health, promoting blood flow and reducing inflammation and platelet clumping.

Meanwhile, polyphenols — thousands of naturally occurring plant compounds, including flavonoids — also may be players in hypertension protection. Based on rodent and limited human studies, a variety of different flavonoids seem to improve endothelial function, increasing nitric oxide production and vasodilation, and inhibiting blood vessel constriction. In particular, a type of flavonoid called flavanols show antihypertensive, anti-inflammatory effects.

These are just a few facets of diet and hypertension being researched (other studies are centered on fats, proteins, calcium and other factors). As researchers continue trying to discern exact compounds and mechanisms, eating more nutrient-rich plant foods remains one of the most effective strategies for managing hypertension.

### Focusing on Food

Dark green leafy vegetables, such as arugula, spinach and Swiss chard, hit the jackpot as blood pressure protectors. Tweet this In addition to offering potassium, magnesium, flavonoids and nitrates, their rich supplies of vitamin C and beta-carotene provide antioxidant protection that reduces the breakdown of nitric oxide.

Other vegetables that provide nitrates include beets, celery, fennel, leeks, kohlrabi and the herbs cress, chervil and parsley. Because dietary nitrate levels can be influenced by the nitrate content of fertilizer, organic produce may contain fewer nitrates than that grown in the presence of nitrogen-containing fertilizers.



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## Food-as-Protection and the Fight Against Hypertension

Berries, concentrated sources of the flavonoid anthocyanin and rich with vitamin C's antioxidant protection, live up to their "superfood" status regarding hypertension. In randomized controlled trials, berries in various forms — including berry-based drinks, extracts and dehydrated berry powders — have been shown to improve endothelial function and blood flow for several hours, while other studies show potential for healthier blood pressure after six to eight weeks.

Nuts and seeds serve as important sources of potassium, magnesium and polyphenols, as well as vitamin E-related compounds that add antioxidant protection. Although research strongly supports nuts for overall reduction of cardiovascular disease, more research is needed to clarify hypertension-specific effects.

Potassium-rich fruits and vegetables represent a checklist of nutrient-rich produce to regularly include in the diet. In addition to leafy greens, foods highest in potassium include winter squash, white and sweet potatoes, tomatoes and tomato products (such as juice and sauce), bananas, citrus fruit, fresh or dried apricots and raisins. Citrus brings additional potential protection as the major source of polyphenols called flavanones, which support antioxidant defenses and, at least in animal studies, show vasodilation properties.

High in potassium and magnesium, a source of a variety of flavonoids and rich in dietary fiber, legumes make the list for their prowess in the food swap department. Controlled intervention trials substituting legumes for refined carbohydrates (such as white bread and potato flakes) and higher fiber carbohydrates have shown reduced blood pressure. And in the OmniHeart Trial, increasing unsaturated fats or increased plant protein — primarily with more legumes and nuts — in the Dietary Approaches to Stop Hypertension diet resulted in an even greater decrease in blood pressure than was accomplished with the original DASH diet.

### Supporting Cast Members

Cocoa and chocolate provide potassium and magnesium, but they really stand out for their polyphenols — particularly flavanols found in dark chocolate and natural cocoa powder (not alkalized cocoa found in most mixes and chocolate milk). Green and black tea also provide a major boost of flavanols. More research is needed before a cardioprotective role can be confirmed, but studies have shown short-term improvement in endothelial function and even greater increases after several weeks of moderate daily tea consumption.

Research continues to explore how foods rich in unsaturated fat, including certain non-tropical vegetable oils, may benefit blood pressure. In addition to plant-based foods, milk and dairy also may help reduce blood pressure. Several observational population studies linked fermented dairy, such as yogurt, with reduced cardiovascular disease risk, while a literature review found moderate evidence that consuming milk and milk products may improve blood pressure and decrease the risk of developing hypertension.

### Pulling It Together

How does all this fit into the big picture? Evidence shows an eating pattern reflecting the DASH diet lowers blood pressure (regardless of sodium consumption). Tweet this, and that blood pressure may also be reduced with Mediterranean-style diets and vegetarian diets. These patterns promote eating a variety of foods with blood pressure-protective potential.

Discussing dietary choices through a lens of opportunity to include foods, rather than only exclude other foods, can add a positive, refreshing perspective to client conversations.

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