Keeping Your Heart Happy and Healthy

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February is heart month in both the United States and Canada. It is a time to spotlight heart disease and all the things we can do to prevent, treat, and even reverse this disease. It is time to stop and appreciate the immense job your heart does for you, every second of every day of your life. Just think about it – your heart is responsible for pumping blood to every part of your body providing you with the oxygen and nutrients you need to survive. There is no question, your heart deserves a little love. This means eating foods that protect your heart and blood vessels like those you learn about on So Many Cooks in the Kitchen! It means avoiding foods that block your blood vessels and make the heart's job even more difficult. It means doing exercise that helps to keep your heart muscle strong.

What is cardiovascular disease?

Cardiovascular disease (CVD) is a group of diseases of the heart and blood vessels. These diseases are the leading cause of death globally. The most common cause of CVD is atherosclerosis - a gradual build-up of fatty deposits called plaque inside artery walls. There are many factors that can contribute to atherosclerosis including high blood cholesterol levels, high blood glucose levels, high blood pressure, chronic inflammation, oxidative stress, and smoking. Within scientific circles, there is relatively little debate regarding the dietary factors most strongly linked to atherosclerosis. Scientists have clearly identified Western dietary patterns, or "meat-sweet" diets as carrying the brunt of the burden. Such diets are characterized by high intakes of red and processed meat, fried and fast foods, and refined carbohydrates such as white flour products, sweet desserts, and sugar-laden beverages. Overeating leading to overweight and obesity also strongly increases risk.

Are people eating plant-based diets protected?

Yes! A recent review and meta-analysis of 86 studies reported that vegetarian diets reduce the incidence and risk of mortality from ischemic heart disease by about 25%.[1] In a review and meta-analysis of Seventh Day Adventists, risk of ischemic heart disease was 40% lower among vegetarians compared to nonvegetarians in the general population.[2] The results from both randomized clinical trials and observational studies are strong and consistent – eating plant-based is protective against cardiovascular disease.[3]

Are plant-based diets effective for treating CVD?

Plant-based diets have been found to be highly effective in treating CVD. Entirely plant-based diets designed to maximize specific protective compounds such as plant sterols, viscous fiber, soy protein, and nuts, have been shown to reduce total cholesterol by 20 to 35 percent.[4] While some trials report increases in triglycerides, the reverse is true for trials using whole, high fiber plant foods.

To date, the only diets shown to significantly reverse coronary artery disease have been low fat plant-based diets. In 1990, Dean Ornish's classic study, The Lifestyle Heart Trial, demonstrated that intensive lifestyle changes, including a very low-fat plant-based diet, led to regression of atherosclerosis in 82 percent of the participants. Angina frequency dropped by 91 percent in the plant-based group while increasing 165 percent in those receiving usual care.[5] After 5 years, the experimental group continued to recover, experiencing further regression in arterial blockages and having 2.5 times fewer cardiac events than the usual care group.[6] In 1999, Dr. Caldwell Esselstyn reported that patients with severe, advanced CVD could be rendered "heart attack proof" using a very low-fat, plant-based diet, plus cholesterol lowering medications, if necessary. Of the 11 patients who underwent angiography, none had progression of their blockages and 8 had significant regression of their blockages after 5 years of consuming plant-based diets. After 12 years, adherent patients experienced no coronary events and no extension of their clinical disease. In the 8 years before the study this group had experienced 49 coronary events.[7] In 2014, Dr. Esselstyn reported on 198 patients with established CVD. Of these, 177 patients complied with a very low-fat plant-based diet, while 21 patients reverted to their usual eating patterns. Of the compliant patients, only one patient had a cardiac event (stroke) — a recurrence event rate of 0.6 percent; 13 of the 21 non- adherent patients experienced a cardiac event — a recurrence rate of 62 percent. While this study had serious limitations with no control group or randomization, the findings are compelling.[8]

Does the diet need to be <u>very</u> low in fat?

While studies showing reversal have used very low-fat plant-based diets, we know that well-designed higher fat plant-based diets can significantly reduce cardiovascular risk. Canadian researcher, David Jenkins successfully lowered lipids using his trademark "portfolio diet", a vegan program that maximizes plant and fiber and includes soyfoods and nuts.[9] Relatively high fat raw food diets and Mediterranean diets (35-40% of calories from fat) have also proven protective.[10, 11] If we look at heart disease rates throughout the world, there is no clear association between macronutrient (carbohydrates, fat, and protein) intakes and CVD risk. Populations who rely mainly on unprocessed foods and do not exceed caloric requirements are at the lowest risk.

On the other hand, the most successful reversal diets have minimized the use of all high fat foods, including whole foods such as nuts, seeds, avocados, and olives. They also strictly omit concentrated fats and oils. How would the addition of moderate amounts of nuts, seeds, or avocado affect their results? We are not certain, although it is possible that the bioactive compounds in these foods and their beneficial effect on nutrient absorption might further improve outcomes. It is also possible that in order to reverse coronary blockages, all high fat foods need to be restricted. Ongoing research will eventually answer these questions, but for now, people using whole food, plant-based diets as a treatment for severe atherosclerosis may be well advised to eliminate concentrated fats and oils and to limit high fat foods.

What makes plant-based diets heart healthy?
There are many factors that give well-designed plant-based diets the upper hand where cardiovascular disease is concerned. Plant-based diets have a lower caloric density and are associated with a reduced risk of overweight and obesity. They have a more favorable fat composition – less saturated fat and trans fatty acids, and more heart healthy unsaturated fats. Plant-based diets are high in fiber, phytochemicals, antioxidants, and plant sterols and stanols. They provide abundant protective nutrients such as potassium and magnesium. Plant-based diets also reduce potentially atherogenic compounds in animal products – not just saturated fat and cholesterol, but heme iron, nitrates and nitrites from processed meat, TMAO-producing compounds such as carnitine, endotoxins, Neu5Gc (a proinflammatory compound in meat), and products of high-temperature cooking such as heterocyclic amines. These diets reduce blood cholesterol, triglycerides, blood pressure, inflammation, oxidative stress, dysbiosis (imbalance of gut microbes), and lipotoxicity (fat accumulation in vital organs and muscle tissue). They maximize nitric oxide production which relaxes blood vessels, improves blood flow and supports endothelial function. The bottom line is that when we make whole plant foods our dietary staples, we diminish cardiometabolic risk. Of course, there are healthy and unhealthy plant-based diets. While healthy plant-based diets feature whole plant foods such as legumes, vegetables, fruits, whole grains, nuts and seeds, unhealthy plant-based diets feature highly processed foods with added fat, sugar and salt, and refined grains (e.g., white flour and white rice products).

How can we design a plant-based diet to maximize protection against CVD, or help to treat it?
The key to designing a diet to provide maximum protection against cardiovascular disease is to make the foundation of the diet whole plant foods – legumes, vegetables, whole grains, fruits, nuts, and seeds. Keep these foods either unprocessed or minimally processed. Below you will find a dozen diet tips to help you ensure the most protective diet possible.

A Dozen Diet Tips for Preventing and Treating Cardiovascular Disease

1. **Eat your veggies.** Aim for 7 servings a day, and at least 3 servings of dark green leafy vegetables (1 serving = 1 cup leafy greens or ½ cup other raw or cooked vegetables). Leafy greens have the highest nutrient density of all foods. They are loaded with vitamin K which helps to protect your arteries. They are also high in nitrates which are converted to nitric oxide. All fresh or steamed veggies are heart friendly. Eat your way through every color of the rainbow and include both raw and lightly cooked options. The only way veggies will hurt your heart is if you soak them in fat (deep frying) or coat them in sugar (sweet sauces) before eating them.

2. **Bulk up on fiber.** Fiber is an important ally. There is no question that increased fiber means decreased risk of heart disease and CVD mortality. Fiber helps to reduce blood cholesterol levels, support gut health, and keep you satiated (helping to maintain healthy body weight). Fiber is found ONLY in plant foods. The richest sources are legumes, whole grains, avocado, berries, and all other whole plant foods. Refined foods contain little fiber; meat, poultry, fish, eggs, dairy, fats, oils, and sugar contain no fiber. Aim to meet or exceed the RDA of 38 g/day for men and 25 g/day for women. Generally, people eating plant-based get at least this much!

3. **Pick whole grains; avoid refined grains.** Whole grains are consistently associated with reduced risk of CVD. On the other hand, refined grains are problematic. People who replace meat and

dairy with white flour products are not protected against heart disease. The key is keeping the grains you eat relatively unprocessed, even if they are whole grains. So, when it comes to whole grains, most of the time stick to intact or minimally processed grains such as oat groats, steel cut oats, or old-fashioned oatmeal, kamut, spelt or wheat berries, barley, farro, sorghum, quinoa, black, red, or brown rice. Use more highly processed whole grains such as cereal flakes, puffed cereals, puffed rice cakes, and whole grain flour products less often.

4. **Minimize added sugars.** Added sugars increase our risk of heart disease. Sugar is linked to weight gain, elevated triglycerides, and high blood pressure. Sugar contains a lot of calories but almost no nutrients The American Heart Association recommends no added sugars for babies up to 2 years of age, no more than 6 teaspoons a day for children and women, and no more than 9 teaspoons for men. While that may sound like a lot, one 12-ounce soda serves up about 10-12 teaspoons of sugar! Most of the sugar in the North American diet comes from sweetened beverages. Steer clear. Instead of using sugar in cooking, use dried or fresh fruits. Make fruit your sweet treat whenever possible.

5. **Make plants your key sources of protein.** Studies clearly show that animal protein increases cardiovascular risk, while plant protein reduces risk. The most damaging sources of protein are processed meat and red meat. The most protective are legumes, nuts, and seeds. Aim for *at least* one serving of beans, lentils, or split peas each day. There are a lot of meat alternatives on the market and while these are safer than meat, they are not as high in fiber and low in fat as legumes. They are also often high in sodium. If you include them, select them less often, and read labels.

6. **Get your fat from whole plant foods.** Like protein and carbohydrates, it is best to get most of your fat from whole plant foods. This is because when fat comes in a whole plant food, it is accompanied by fiber, antioxidants, and plant sterols. Whole plant foods also provide a healthier balance of unsaturated to saturated fats, and they are free of trans fatty acids. The best whole food fat sources are seeds, nuts, avocados, tofu and other soy products, and olives (although olives are very high in sodium). Keep added fats to a minimum – fats and oils are high in calories and low in nutrients!

7. **Boost phytochemicals and antioxidants.** Phytochemicals and antioxidants protect people from inflammation, oxidative stress, and other drivers of cardiovascular disease. Foods that provide the greatest antioxidant and phytochemical boost are colorful vegetables and fruits, colorful legumes and grains, nuts and seeds, herbs and spices, green or herbal teas, and cocoa. Sprouting and fermenting enhances phytochemical content of foods. Adding a small amount of fat (e.g., nuts, seeds or avocado) can enhance absorption, as can reducing the particle size of the food by chopping, grating, pureeing, or chewing well. Raw foods tend to have greater amounts.

8. **Limit sodium.** Excess sodium intake is associated with hypertension which increases the stress on your heart. While some people are more sodium sensitive than others, the CDRR (Chronic Disease Risk Reduction) recommends that for individuals ages 14 and older, sodium intakes they should be reduced if above 2,300 mg a day. About 75% of the sodium in the diet comes from processed foods, so if you are eating whole plant foods, your intake will generally be

within the recommended range. Be aware that condiments like soy sauce and tamari can be significant sources. Also, fermented foods and pickles are high sodium foods.

9. **Reduce chemical contaminants.** Chemical contaminants include both environmental pollutants (e.g., heavy metals and persistent organic pollutants) and products of oxidation from high-temperature cooking. These compounds can increase oxidative stress and fuel inflammation. Environmental pollutants tend to move up the food chain, so are typically lower in plant-based diets. If organic foods are accessible to you, these are wonderful options. High-temperature cooking produces products of oxidation that can be harmful. The best way to minimize these compounds is to use moist cooking methods when possible, such as steaming, stewing, water or broth sautéing. Use dry heat cooking less often and avoid cooking with oils at high temperatures. Say no to deep-fried foods, charred foods, and highly processed foods.

10. **Eliminate red and processed meat.** Red and processed meats are consistently linked to increased risk of cardiovascular disease. They are generally high in saturated fat, cholesterol, precursors of the atherogenic compounds TMAO, Neu5Gc, heme iron, and heterocyclic amines. Plant-based protein sources are simply superior.

11. **Minimize other animal products.** While the findings on poultry, fish, and dairy products are mixed, it is best to minimize these foods as they are often high in environmental pollutants and saturated fat. They contain no fiber or phytochemicals and they displace more protective foods such as legumes and other plant protein sources.

12. **Meet your nutrient requirements.** For those consuming a plant-predominant or plant-exclusive diet, it is important to meet the RDA for nutrients. Be sure to include reliable sources of vitamin B12, vitamin D, and iodine. Low dietary iodine can contribute to hypothyroid disease, and boost cholesterol levels.

Eat to Your Heart's Content: Top 10 Heart Healthy Superstars

1. Green leafy vegetables
2. Beans, lentils, and split peas
3. Colorful non-starchy vegetables
4. Flax, chia, and hemp seeds
5. Berries
6. Tofu, tempeh, and edamame
7. Intact whole grains
8. Citrus fruits
9. Walnuts
10. Herbs and spices



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