

Heart Disease

Fork & Knife Killer

What Is It About Plant-Based Diet?

- Why emphasis on <u>plant-based diet</u>?
- Most optimised (nutrition) for the human body
- Improves blood lipids (cholesterol & fat) levels
- Plants have phytochemicals which benefits body's systems
- Lowers risk of diseases (e.g. hypertension, strokes, heart disease, diabetes, etc.)
- □ The original diet (Bible Gen. I:29; 3:18)



Coronary Artery Disease (CAD)





Normal coronary artery



Atherosclerosis



Atherosclerosis with blood clot



AdvancedPracticeStrategiesAdvancedPracticeStrate



Non-modifiable risk factors





Modifiable risk factors

- Cigarette smoking
- Hypertension
- Increase serum cholesterol
- Lack of exercise
- Obesity
- Diabetes
- Stress
- Inflammatory Response

- Homocysteine levels
- Metabolic syndrome
- Physical inactivity

Increased Risk of Coronary Artery Disease

- Over 40 years old
- Have a family history of early cardiovascular disease or a cholesterolrelated condition (e.g. *familial hypercholesterolemia*)
- Diagnosed with coronary heart disease, stroke or mini-stroke, or leg artery disease
- Overweight or obese
- Have high blood pressure or diabetes
- Diagnosed with another medical condition that can cause increased levels of cholesterol or triglycerides, such as a kidney condition, an underactive thyroid gland or an inflamed pancreas (pancreatitis)
- Eating a lot of high-fat/cholesterol (and low plant-based) diet

The Warning ! Signs of Clogged Arteries



When cholesterol particles build up in the arteries, they form plaques that narrow the path for blood flow. Narrowed arteries strike all areas of the body and can lead to pain and discomfort and ultimately result in heart attack.

Stroke:

Plaque that accumulates in the carotid arteries, which carry blood to the brain, can result in stroke.

Fatigue and Dizziness:

Reduced oxygen from poor blood flow can result in dizziness and extreme fatigue, especially in women.

7 Shortness of Breath:

Reduced blood flow can lead to shortness of breath.

Chest Pain:

PhysiciansCommittee for Responsible Medicine Chest pain, or angina, results from reduced blood flow to the heart. Angina can be felt as pressure, numbness, tightness, squeezing, or burning.

/ Lower Back Pain:

When blood flow to the lower back is reduced, the disks between the vertebrae become fragile, which can result in painful pinched nerves.

Erectile Dysfunction:

Narrowed arteries to the genitals can cause sexual dysfunction.

igvee Painful, Numb, or Cold Hands and Feet:

Plaque in the arteries leading to the arms and legs can result in painful, numb, and cold extremities.

PCRM.org/HeartHealth

Coronary Heart disease

 Narrowing and hardening of the coronary arteries due to build up of fat.

 CHD can cause angina, heart attack, sudden death

 Risk factors - smoking, high fat and cholesterol diet, obesity, high blood pressure





220 230 240 Borderline High High LDL CHOLESTEROL LEVEL (in mg/dl) 130 140 150 160 170 180 190 Borderline High High Very High HDL CHOLESTEROL LEVEL (in mg/dl) 50 60 70 Less Risk 300 350 400 450 500

High

Very

High

What Is High Cholesterol?

- Your cholesterol level is measured in units called millimoles per litre of blood, often shortened to mmol/L. The Government recommends that healthy adults should have a total **cholesterol level below 5 mmol/L.**
- But your total cholesterol level includes LDL (bad cholesterol) and HDL (good cholesterol) – and the balance between the levels of these two types of cholesterol is also important.
- The risk of heart disease is particularly high if you have a high level of <u>LDL cholesterol</u> and a low level of <u>HDL</u> <u>cholesterol</u>.





Health**matters**

CVD morbidity and mortality



CVD is the number one cause of death globally, with an estimated

17.7 million

people having died from CVD conditions in 2015, representing 31% of all global deaths It is also a leading cause of disability and death in the UK, affecting around

7 million

people and being responsible for one in four premature deaths in the UK In 2015 CVD was responsible for 26% of all deaths (129,147) in England



We Public Health England

Health Matters

Scale of the problem

Cardiovascular disease (CVD) is the leading cause of death worldwide

In England, CVD causes 1 in 4 deaths which equates to 1 death every 4 minutes



Healthmatters

Risk factors of CVD

Behavioural risk factors that can be modified include:





- smoking
- high cholesterol
- high blood pressure
- poor diet
- harmful drinking
- physical inactivity

Environmental and social factors include:





- family history
- financial inequalities
- employment

- housing
- air pollution









The Revolutionary, Scientifically Proven, Nutrition-Based Cure

With More Than 150 Great-Tasting Recipes

Distal LAD

And Reverse Heart Disease

Based on the findings of a now 20-year study first published in the American Journal of Cardiology

Caldwell B. Esselstyn, Jr., M.D. Foreword by T. Colin Campbell, Ph.D., author of *The China Study* Reversal of Coronary Disease November 27,1996 July 22, 1999

Dr. Caldwell Esselstyn author of prevent and reverse heart disease

A Strategy to Arrest and Reverse Coronary Artery Disease: A 5-Year Longitudinal Study of a Single Physician's Practice

<u>Methods</u>: The study included 22 patients with angiographically documented, severe coronary artery disease that was not immediately life threatening. These patients took cholesterol-lowering drugs and followed a diet that derived no more than 10% of its calories from fat. Disease progression was measured by coronary angiography and quantified with the percent diameter stenosis and minimal lumen diameter methods. Serum cholesterol was measured biweekly for 5 years and monthly thereafter.

<u>**Result</u>**: A physician can influence patients in the decision to adopt a very low-fat diet that, combined with lipid-lowering drugs, can reduce cholesterol levels to below 150 mg/dL and uniformly result in the arrest or reversal of coronary artery disease.</u>

Patients who have had bypass surgery basically completely free from further damage and regained their health by following mostly plant-based diet.



Heart Disease Reversal on Plants without stents and surgery







Heart artery before (left) and showing improvement (right) following a plant-based diet



Heart artery before (left) and showing 30% improvement (right) following approximately 60 months of a plant-based diet

Source: Caldwell B. Esselstyn Jr, A way to reverse CAD?THE JOURNAL OF FAMILY PRACTICE | JULY 2014 | VOL 63, NO 7

www.7acebook.com/giftofhealth.org

"Coronary heart disease is a benign food borne illness which need never exist or progress." - Caldwell B. Esselstyn, Jr., MD

Eat bok choy Swiss chard kale collards collard greens beet greens mustard greens turnip greens Napa cabbage, Brussels sprouts broccoli cauliflower, cilantro parsley spinach arugula and asparagus.



Some people think plant-based diet, whole foods diet is extreme. Half a million people a year will have their chests opened up and a vein taken from their leg and sewn onto their coronary artery. Some people would call that extreme.

Caldwell Esselstyn -

AZQUOTES



"Everyone in the field of nutrition science stands on the shoulders of Dr. Campbell, who is one of the giants in the field. This is one of the most important books about nutrition ever written – reading it may save your life." – Dean Ornish, MD

THE MOST COMPREHENSIVE STUDY OF NUTRITION EVER CONDUCTED



STARTLING IMPLICATIONS FOR DIET, WEIGHT LOSS AND LONG-TERM HEALTH

T. COLIN CAMPBELL, PHD AND THOMAS M. CAMPBELL II

FOREWORD BY JOHN ROBBINS, MUTHOR, DIET FOR A NEW AMERICA

Conclusions from The China Study

"...these diseases (*including coronary heart disease*) might be attributed to **nutritional extravagance**, while those illnesses more common in poorer areas of the world were likely owing to **nutritional inadequacy** and **poor sanitation**. Other findings highlighted distinctions in disease outcomes relative to intakes of plant vs. animal-based foods. After detailed analyses, the consistency of these results led researchers to conclude that overall, the closer people came to an all plant-based diet, the lower their risk for chronic disease.

https://nutritionstudies.org/the-china-study/

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The Only System Scientifically Proven to Reverse Heart Disease Without Drugs or Surgery

Now



with a new introduction Named "Best Heart Health" diet by U.S. News & World Report since 2011

Dean Ornish, M.D.



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What of Medication?



Are you healing yourself long term or are you just covering up the symptoms?

Specific Plant-Based Foods/Juice of Benefit

- Fiber-rich and antioxidant-rich foods of all kinds
- Vegetables (all kinds, including beets, carrots, cruciferous vegetables like Brussels sprouts, broccoli, cabbage, cauliflower and kale, dark leafy greens, artichokes, onions, peas, salad greens, mushrooms, sea vegetables and squashes)
- Fruits (all kinds, especially berries and citrus)
- Herbs and spices, especially turmeric (curcumin) and raw garlic (also basil, chili peppers, cinnamon, curry powder, ginger, rosemary and thyme)

Specific Plant-Based Foods/Juice of Benefit

- Legumes and beans
- Healthy fats found in nuts, seeds, avocados and extra virgin olive oil
- Additional teas like green tea, oolong or white tea
- Supplements: Omega 3 (e.g. in flaxseeds, plant-based algal oil);
 Curcumin (turmeric) and garlic supplements, Carotenoids, Selenium,
 Vitamin C, Vitamin D, Vitamin E, Glucosamine, etc.









Helps help keep blood pressure under control

Numerous therapeutic benefits

12.9% Vitamin B6

15% Manganese

Numerous beneficial cardiovascular effects

Ability to lower blood pressure

Able to lower our blood triglycerides and total cholesterol Helps prevent blood vessels from becoming blocked

Helps prevent heart attack and atherosclerosis

Blood cell and blood vessel protection from inflammatory and oxidative stress

> **7.4%** Vitamin C



3.2% Calcium

Anti-Inflammatory

- Ried K et al., Effect of garlic on blood pressure: A systematic review and metaanalysis, BMC Cardiovascular Disorders 2008, 8: 13 (www.biomedcentral.com)
 - The analysis identified 11 previous studies of garlic supplements and blood pressure. In most of this studies, participants <u>took the garlic in powdered</u> form, in doses ranging from <u>600 mg to 900 mg daily</u>. The length of the studies ranged from <u>12 to 23 weeks</u>.
- In hypertensives, garlic reduced systolic BP by 8.4 mmHg and diastolic by 7.3 mmHg
- The higher the person's blood pressure at the beginning of the study, the more their blood pressure was reduced.
- Garlic supplements contain less of the <u>active ingredient, allicin</u>, than <u>a fresh</u> <u>clove of garlic</u>. A fresh clove of garlic can contain anything from 5 mg to 9 mg of allicin. The supplement much less.

Beetroot



Hypertension. Author manuscript; available in PMC 2015 February 01.

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Hypertension. 2015 February ; 65(2): 320-327. doi:10.1161/HYPERTENSIONAHA.114.04675.

Dietary nitrate provides sustained blood pressure lowering in hypertensive patients: a randomized, phase 2, double-blind, placebo-controlled study

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Pomegranate



Pharmacological Research Volume 115, January 2017, Pages 149-161

Effects of pomegranate juice on blood pressure: A systematic review and meta-analysis of randomized controlled trials. Amirhossein Sahebkar et al.

Abstract

Punica granatum L. (Pomegranate) has been claimed to provide several health benefits. Pomegranate juice is a **polyphenol**-rich fruit juice with high <u>antioxidant</u> capacity. Several studies suggested that pomegranate juice can exert antiatherogenic, antioxidant, <u>antihypertensive</u>, and <u>anti-inflammatory effects</u>. Nevertheless, the potential cardioprotective benefits of pomegranate juice deserve further clinical investigation. To systematically review and meta-analyze available evidence from randomized placebo-controlled trials (RCTs) investigating the effects of pomegranate juice consumption and blood pressure (BP). Quantitative data synthesis from 8 RCTs showed significant reductions in both systolic and diastolic BP after pomegranate juice consumption. Effects on SBP remained stable to sensitivity analyses. Pomegranate juice reduced SBP regardless of the duration

Hawthorn



Hawthorn Helps with Both Hypertension & Hypotension

- The leaves, berries, and flowers of hawthorn plant are used to make medicine.
- Hawthorn can help improve the amount of blood pumped out of the heart during <u>contractions</u>, widen the blood vessels, and increase the transmission of nerve signals.
- Hawthorn also seems to have blood pressure-lowering activity... It seems to cause relaxing of the blood vessels farther from the heart. It seems that this effect is due to a component in hawthorn called <u>proanthocyanidin</u>.
- Research suggests that hawthorn can lower cholesterol, low density lipoprotein (LDL, or "bad cholesterol"), and triglycerides (fats in the blood). It seems to lower accumulation of fats in the liver and the aorta. Hawthorn fruit extract may lower cholesterol by increasing the excretion of bile, reducing the formation of cholesterol, and enhancing the receptors for LDLs. It also seems to have antioxidant activity.

https://www.webmd.com/vitamins/ai/ingredientmono-527/hawthorn

Coconut Water



Coconut Water and Hypertension

<u>Coconut water</u> (94% water) vs. <u>Coconut milk</u> (50% water; more fat).

One cup (240 ml) contains 46 calories, as well as (2):

Carbs: 9 grams Fiber: 3 grams Protein: 2 grams Vitamin C: 10% of the RDI Magnesium: 15% of the RDI Manganese: 17% of the RDI Potassium: 17% of the RDI Sodium: 11% of the RDI Calcium: 6% of the RDI

- In one small study in people with high blood pressure, coconut water <u>improved systolic</u> <u>blood pressure in 71% of participants</u>.
- contains an impressive <u>600 mg of potassium in</u> <u>8 ounces (240 ml)</u>. Potassium has been shown to lower blood pressure in people with high or normal blood pressure.
- Animal study found that coconut water has anti-thrombotic activity, which means it may prevent the formation of blood clots.

https://www.healthline.com/nutrition/8-coconut-water-benefits#section2



Ginger & Hypertension

Lower Cholesterol

lower overall blood cholesterol and LDL, which can contribute to sticky atherosclerotic plaque. This creates blockages that can contribute to HBP by restricting the inner diameter of blood vessels and arteries, and reduce elasticity.

Fewer Blood Clots (Ginger contains natural salicylates)

Prevents blood clots from forming in your arteries and blood vessels. Blood clots can restrict or prevent blood from flowing through your circulatory system, which can lead to hypertension. May also help prevent heart attacks and strokes.

Side Effects

Consuming ginger root may cause nausea or stomach upset. You may also experience heartburn if you use this herb.

https://www.livestrong.com/article/297975-the-effects-of-ginger-on-high-blood-pressure/

Cayenne Pepper (Capsaicin)



Cayenne

Red pepper also is known as cayenne pepper and has been used as a cooking spice, food and medicine for thousands of years. <u>Capsaicin is the compound</u> that gives cayenne its spicy flavour, and this substance also has pain-relieving properties.

Cayenne and Hypertension

A 2010 study published in "Cell Metabolism" found that a receptor called TRPV-I was activated in mice when they consumed capsaicin, which lowered their blood pressure. Another study published in "Current Medicinal Chemistry Cardiovascular Hematological Agents" in 2003 found that capsaicin affects sensory nerves that work with neuro-hormonal systems to help lower blood pressure.

Considerations

It can interact with certain medications and cause adverse effects, so tell your doctor about any other medications and supplements you are taking.

https://www.livestrong.com/article/476202-cayenne-pepper-and-high-blood-pressure/

Carrots



Carrot (Juice) and Hypertension

The nutrients present

 in carrot juice, including <u>fiber</u>,
 <u>potassium, nitrates, and</u>
 <u>vitamin C</u> could have
 contributed to the effect seen in
 lowering systolic blood
 pressure

Nutr J. 2011; 10: 96. Published online 2011 Sep 24. Drinking carrot juice increases total antioxidant status and decreases lipid peroxidation in adults. Andrew S Potter et al.





Celery: Health Benefits

Aids digestion Anti fungal Anti inflammatory Anti oxidant Excellent diuretic Good source of : folate, potassium, fiber, manganese, pantothenic acid, vitamin B2, copper, vitamin C, vitamin B6, calcium, phosphorus, magnesium, and vitamin A High in vitamin K & molybdenum Lowers blood pressure Supports heart health

Tomatoes



Tomatoes and Hypertension

• **Tomatoes** are the major dietary source of the antioxidant lycopene, which has been linked to many health benefits, including reduced risk of heart disease and cancer. They are also a great source of vitamin C, potassium, folate, and vitamin K

Here are the nutrients in a small (100-gram) raw tomato:

<u>Chlorogenic acid</u>

A powerful antioxidant compound, chlorogenic acid may lower blood pressure in people with elevated levels

Calories: 18 Water: 95% Protein: 0.9 grams Carbs: 3.9 grams Sugar: 2.6 grams Fiber: 1.2 grams Fat: 0.2 grams https://ww

https://www.healthline.com/nutrition/foods/tomatoes#plant-compounds

Sesame & Sesame Seed Oil



Health Benefits of Sesame Seed

Nutrients* Dietary Fiber 47% Protein 35% Calories 29% Carbohydrate 8%	Vitamins* Thiamin 53% Vitamin B6 40% Folate 24% Niacin 23%	
Minerals* Copper 204% Manganese 123% Calcium 98% Magnesium 88%		
Helps to prevent diabetes		Reduces risk of cancer
Aids in improving bone health		Rich in anti-inflammatory properties
Facilitates digestion and prevents constipation		Boosts oral health, cellular growth and metabolic function
Helps to reduce risk of cardiovascular diseases and hypertension		Reduces signs of premature aging and strengthens muscle tissue and hair
Beneficial in protecting DNA from harmful effects of radiation		

Organie

Beneficial in protecting DNA from harmful effects of radiation caused by chemotherapy and radiotherapy

Caution: Excessive consumption may cause irritation in stomach and colon

*% Daily Value per 100g. For e.g. 100g of sesame seeds provide 53% of daily requirement of thiamin.

YALE JOURNAL OF BIOLOGY AND MEDICINE 79 (2006), pp.19-26. Copyright © 2006. All rights reserved.

ORIGINAL CONTRIBUTION

Effect of Sesame Oil on Diuretics or ß-blockers in the Modulation of Blood Pressure, Anthropometry, Lipid Profile, and Redox Status

D. Sankar,^{a*} M. Ramakrishna Rao,^b G. Sambandam,^c and K. V. Pugalendi^d

The study was undertaken to investigate the effect of sesame oil in hypertensive patients who were on antihypertensive therapy either with diuretics (hydrochlorothiazide) or ß-blockers (atenolol). Thirty-two male and 18 female patients aged 35 to 60 years old were supplied sesame oil (Idhayam gingelly oil) and instructed to use it as the only edible oil for 45 days. Blood pressure, anthropometry, lipid profile, lipid peroxidation, and enzymic and non-enzymic antioxidants were measured at baseline and after 45 days of sesame oil substitution. Substitution of sesame oil brought down systolic and diastolic blood pressure to normal.

Contraindication/Interaction: Anticoagulant & blood thinners

<u>J Med Food.</u> 2006 Fall;9(3):408-12. **A pilot study of open label sesame oil in hypertensive diabetics.** <u>Sankar D¹</u>, <u>Rao MR</u>, <u>Sambandam G</u>, <u>Pugalendi KV</u>.

Abstract

The objective of this study was to investigate the effect of sesame oil in hypertensive diabetics medicated with atenolol (beta-blocker) and glibenclamide (sulfonylurea). This open label trial with two intervention periods comprised 22 male and 18 female patients, 45-65 years old, with mild to moderate hypertension and diabetes. Sesame oil was supplied to the patients, who were instructed to use it in place of other cooking oils for 45 days. Blood pressure (BP), anthropometric measurements, plasma glucose, glycated hemoglobin (HbA1c), lipid profiles [total cholesterol, low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol, and triglycerides (TG)], lipid peroxidation [thiobarbituric acid-reactive substances (TBARS)], electrolytes (sodium, potassium, and chloride), and enzymic (superoxide dismutase, glutathione peroxidase, and catalase) and nonenzymic (vitamin C, vitamin E, beta-carotene, and reduced glutathione) antioxidants were **measured at baseline** and after 45 days of sesame oil substitution. The same patients were then switched over to other oils like palm or groundnut oils as their regular oils at random for another 45 days, and the investigations were carried out again at the end. Systolic and diastolic BP decreased remarkably. When oil substitution was withdrawn, BP values rose again. Body weight, body mass index, girth of waist, girth of hip, and waist: hip ratio were reduced upon substitution of sesame oil. Plasma glucose, HbA1c, TC, LDL-C, and TG were decreased. TBARS level was reduced, while the activities of enzymic and the levels of nonenzymic antioxidants were increased. Plasma sodium levels were reduced, while potassium levels were elevated. These results indicate that substitution of sesame oil as the sole edible oil has an additive effect in further lowering BP and plasma glucose in hypertensive diabetics.

Dark Chocolate



Dark Chocolate and Health

Rich In:

Iron

Copper Magnesium Zinc Phosphorus Flavanols

https://www.hsph.harvard.edu/nutritionsou rce/food-features/dark-chocolate/

Purchase and Storage

I. Choose 70% dark chocolate or higher to obtain the most flavanols. Though keep in mind that the higher the percentage of cocoa solids, the greater the bitter flavour.

2. Store in a cool dry area (65-70 F) in a tightly sealed container. Do not refrigerate, which can promote the chocolate to "bloom," a whitish coating caused by sugar rising to the surface due to excess moisture. Bloom does not affect flavour but does not look appealing.

3. If stored properly, dark chocolate will last up to two years.

Dark Chocolate and Health

Cocoa is rich in plant chemicals called flavanols that may <u>help to protect the heart</u>. **Dark chocolate contains up to 2-3 times more flavanol-rich cocoa solids than milk chocolate**. Flavanols have been shown to support the production of nitric oxide (NO) in the endolethium (the inner cell lining of blood vessels) that helps to relax the blood vessels and improve blood flow, thereby lowering blood pressure. [1,2] Flavanols in chocolate can increase insulin sensitivity in short term studies; in the long run this could <u>reduce risk of diabetes</u>. [3,4]

Observational studies support the benefits of cocoa flavanols. The link between blood pressure and high cocoa intake was described in a study of the Kuna Indians, an isolated tribe who live on the Caribbean Coast of Panama. [5] Hypertension was extremely uncommon in this group, even among older ages, and even with a dietary salt intake that is greater than most Western populations. When the Kuna migrated to urban environments and changed their diets, their rates of high blood pressure increased. Notably, their traditional intake of cocoa as a beverage was very high, at more than five cups daily of either home-grown or Columbian cocoa powder rich in flavanols. The urinary levels of flavanols in the island-dwelling Kuna were significantly higher and their rates of death from heart disease, cancer, and diabetes significantly lower than their counterparts living in urban centers.

Other Plant-Based Foods with Antihypertensive Properties

- Aubergine/Eggplant
- Cauliflower
- Broccoli
- Zucchini/Courgette/Squash