

Can Dark Chocolate Lower Your Blood Pressure?

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STORY AT-A-GLANCE

- › A team of cardiologists from two hospitals in China collaborated on research, finding an association between people who ate dark chocolate and a reduced risk of developing essential hypertension (high blood pressure)
- › High blood pressure can cause damage to your arteries and heart, primarily by increasing the workload so the heart and arteries work harder and less efficiently. The force and friction can damage arterial walls, which is linked to vision loss, stroke, kidney disease, heart attack and sexual dysfunction
- › The COcoa Supplement and Multivitamin Outcomes Study (COSMOS) study found a 27% reduction in death from cardiovascular disease and a reduction in the incidence of heart attacks, strokes and cardiovascular deaths in participants taking a flavonol supplement with epicatechins
- › Flavanols may also have a beneficial effect on metabolic syndrome and can reduce hyperglycemia, insulin resistance and diabetes
- › Evidence shows you should take care with your chocolate choices as dark chocolate has a higher risk of heavy metal contamination. Consumer Reports testing found just two dark chocolate bars with levels of lead and cadmium less than 50% of the California maximum allowable dose level

Blood pressure is a measurement of the force that blood exerts against the arterial walls as it is pumped throughout the body. Research finds eating dark chocolate may help lower your risk of high blood pressure.¹ Under normal conditions, blood pressure rises

and falls throughout the day. However, when it remains consistently high, it can cause damage to your arteries and heart.

Primarily, the increased workload on the heart and blood vessels means they work harder and less efficiently. Over time, the force and friction can lead to damage along the arterial walls that causes narrowing and thickening. This can happen in the peripheral arteries or those that surround the heart.

High blood pressure is also linked with a higher risk of vision loss, stroke, kidney disease, heart attack and sexual dysfunction.² Research has also found links between high blood pressure and metabolic syndrome, primarily through a pathophysiological pathway that involves obesity.³

According to the Centers for Disease Control and Prevention,⁴ roughly 108 million people, or nearly 1 out of every 2 adults, have high blood pressure. Although the condition is preventable and treatable, only 1 in every 4 adults has their high blood pressure under control.

High blood pressure is called the silent killer⁵ because you typically don't feel anything is wrong. Without measuring your blood pressure, you don't know if it is triggering arterial and heart damage that can threaten your health. Pay special attention to how your blood pressure is taken to [get the most accurate measurement](#).

Dark Chocolate Can Lower Your Risk of Essential Hypertension

A team of cardiologists from two hospitals in China collaborated on research that found an association between people who ate dark chocolate and a reduced risk of developing essential hypertension (high blood pressure).⁶ The researchers⁷ noted that past studies had demonstrated benefits to the cardiovascular system but had not established an association with the risk of heart disease.

The researchers were interested in determining causality and conducted a Mendelian randomization study using publicly available data from genome-wide association

studies. Mendelian randomization uses an epidemiological method that was named after Gregor Mendel and involves studying genetic profiles.⁸

The researchers used the profiles of 64,945 people of European descent and looked for associations between eating dark chocolate and essential hypertension, coronary heart disease, heart failure, blood clots and stroke.

The diagnosis of essential hypertension is used when doctors are unable to identify a cause for the condition. Researchers found a significant association between eating dark chocolate and a reduced risk of essential hypertension and a suggested association with venous thromboembolism.⁹ They found no association with 10 other cardiovascular diseases.

The data supported a 2005 study,¹⁰ in which the researchers measured insulin resistance and blood pressure in subjects after eating flavanol-rich dark chocolate. They use flow-mediated dilation (FMD) to measure blood pressure and oral glucose tolerance tests in patients with essential hypertension.

The participants received either 100 grams of dark chocolate or 100 grams of flavanol-free white chocolate for 15 days. The researchers found that ambulatory blood pressure decreased after 15 days of dark chocolate but not white chocolate. Dark chocolate also decreased the participants' serum low-density lipoprotein (LDL) cholesterol levels and ameliorated insulin sensitivity in people who had essential high blood pressure.

Study Showed Cocoa Flavanols Reduced Cardiovascular Death by 27%

While the current study did not find causality between eating dark chocolate and a reduced risk of cardiovascular diseases, the randomized, placebo-controlled COcoa Supplement and Multivitamin Outcomes Study (COSMOS) engaged 21,442 participants aged 60 years and older reached another conclusion.¹¹

The participants received either a cocoa extract supplement that contained 500 mg of flavanols, including 80 mg of epicatechins, a multivitamin supplement, neither option or both options from June 2015 to December 2020. The primary outcome measurement was total cardiovascular events. The researchers found cocoa flavanols reduced these by 10%, which was not statistically significant.

However, when the data were separated, the researchers found that the participants who received cocoa flavanols had a 27% reduction in death from cardiovascular disease and a reduction in the incidence of heart attacks, strokes and cardiovascular deaths. The researchers also found in the group of individuals who took their supplements consistently, there was a 15% reduction in total cardiovascular events and a 39% reduction in death from cardiovascular disease.

"When we look at the totality of evidence for both the primary and secondary cardiovascular endpoints in COSMOS, we see promising signals that a cocoa flavanol supplement may reduce important cardiovascular events, including death from cardiovascular disease," study author Howard Sesso said in a news release. "These findings merit further investigation to better understand the effects of cocoa flavanols on cardiovascular health."¹²

The researchers did not find a significant effect on total invasive cancers but noted that the short duration of the study likely impeded the ability to assess cancer risk. The data showed daily multivitamin intake improved several nutritional biomarkers.

Cocoa Flavanols Benefit Memory and Metabolic Syndrome

According to Spruce Eats,¹³ English appears to be the only language that differentiates the forms of chocolate. All other languages have one word, while in English cacao is the seed from which chocolate is made and cocoa is an ingredient found in chocolate.

Data¹⁴ show that cacao beans have the highest flavanol content of all foods on a per-weight basis, containing more than 200 natural chemical compounds that make up 12% to 18% of the bean's weight.

Dark chocolate is rich in flavanols, which may have a beneficial effect on metabolic syndrome. This is a cluster of risk factors that increase your risk of multiple chronic diseases, including arthritis, cancer, chronic kidney disease and heart disease. Many of these benefits are due to the antioxidant properties and the ability to interact with signaling proteins, enzymes, DNA and membranes, reducing or preventing oxidative stress. As reported in the journal *Nutrients*:¹⁵

"[I]t has been proposed that flavanols may protect the integrity and function of the cell membrane by modulating changes in its fluidity and permeability produced by molecules with oxidation potential. It is well known that when membrane fluidity decreases it is more prone to be oxidized. Instead, when fluidity increases membrane lipids are less exposed to oxidation ..."

Cocoa flavanols also have anti-inflammatory and hypolipidemic effects. Research shows that even short-term consumption of cocoa and dark chocolate may benefit the lipid profile of people with heart disease or other metabolic risk factors. Flavanols are also noted for reducing hyperglycemia, insulin resistance and diabetes.¹⁶

Take Care With the Chocolate You Choose

In 2023, Consumer Reports¹⁷ tested a variety of chocolate candies and powders found in dark chocolate, milk chocolate, chocolate chips, cocoa powder and brownie, cake and hot chocolate mixes. The data showed every product had detectable amounts and one-third of those tested were high in heavy metals.

Heavy metals are naturally occurring elements in the environment that are five times denser than water and have multiple applications in industry, agriculture, medicine and technology.¹⁸ The 2023 study was a follow-up on dark chocolate testing in 2022,¹⁹ in which Consumer Reports tested 28 bars from different companies for lead and cadmium.

In the 2022²⁰ and 2023²¹ testing, researchers used California's maximum allowable dose level for heavy metal since, as Consumer Reports noted in both studies, there are no

federal limits for lead or cadmium in food and the researchers believed that California's standards are currently the most protective available.

Consumer Reports noted that the tests were not an assessment of whether a particular chocolate exceeded California's legal limits, but that the California standards were used to indicate products that had a comparatively higher level of heavy metal. The wide use of heavy metals has raised public health concerns, including lead, chromium, cadmium, arsenic and mercury.

These are known to trigger organ damage even at low levels of exposure and are also "known" or "probable" human carcinogens.²² Of the 28 dark chocolate bars tested in 2022²³ for lead and cadmium, they found both lead and cadmium in all of them; only five had levels that were below 100% of the maximum allowable dose level, assuming a 1-ounce serving size.

There were eight that were lower in lead; 10 were lower in cadmium; five were high in lead and cadmium. Dark chocolate tends to be higher in heavy metal contamination than milk chocolate because it has a higher cacao content.

The 2023 Consumer Reports²⁴ tests sought to determine whether other chocolate foods had the same risk. They tested 48 different products across seven categories and added several dark chocolate bars to confirm the previous results. The dark chocolate again had higher levels of heavy metal than milk chocolate.

The results of the testing revealed high levels of lead and cadmium in several of the dark chocolate bars, including 539% of the maximum allowed dose of lead in Perugina Extra Dark Chocolate Premium 85%. None of the milk chocolate bars was over 100% of the levels for lead or cadmium and two-thirds of the dark chocolate chips were over 100% of the allowed levels for lead.

Use Dark Chocolate Judiciously

The health benefits of eating dark chocolate are well-established. It is the cacao content that makes a difference in terms of benefit as it contains large amounts of polyphenols,

including epicatechin, resveratrol, phenylethylamine and theobromine. However, as the Consumer Reports studies demonstrated, chocolate with higher levels of cacao also has higher levels of cadmium and lead.

Human data from Loma Linda University,²⁵ presented at the Experimental Biology 2018 annual meeting in San Diego, revealed chocolate with high levels of cacao helps improve stress levels, inflammation, mood, memory and immune function. The caveat? It must contain at least 70% cacao and be sweetened with organic cane sugar. According to Loma Linda University:²⁶

"While it is well known that cacao is a major source of flavonoids, this is the first time the effect has been studied in human subjects to determine how it can support cognitive, endocrine and cardiovascular health ... These studies show us that the higher the concentration of cacao, the more positive the impact on cognition, memory, mood, immunity and other beneficial effects."

Several studies have also confirmed cacao can benefit your heart, blood vessels, brain and nervous system, and help combat diabetes and other conditions rooted in inflammation. As noted in a paper²⁷ published in the journal *Oxidative Medicine and Cellular Longevity*:

"Cocoa contains about 380 known chemicals, 10 of which are psychoactive compounds ... Cocoa has more phenolics and higher antioxidant capacity than green tea, black tea, or red wine ... The phenolics from cocoa may thus protect against diseases in which oxidative stress is implicated as a causal or contributing factor, such as cancer.

They also have antiproliferative, antimutagenic, and chemoprotective effects, in addition to their anticariogenic effects."

There is significant evidence that dark chocolate has health benefits, but it's important to realize that these benefits are not transferred to milk chocolate and it's important to choose your source of dark chocolate wisely.

According to the 2022 Consumer Reports study,²⁸ the safer choices of dark chocolate include Ghirardelli's Intense Dark Chocolate 86% cacao and Mast Organic Dark Chocolate 80% cacao. These two bars were the only ones where the levels of lead and cadmium were less than 50% of the California maximum allowable dose level.

Sources and References

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