

Study shows chocolate reduces blood pressure and risk of heart disease

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Easter eggs and other chocolate may be good for you - at least in small quantities and preferably if it's dark chocolate - according to research that shows just one small square of chocolate a day can lower your blood pressure and reduce your risk of heart disease. The study is published online today in the *European Heart Journal* [1].

Researchers in Germany followed 19,357 people, aged between 35 and 65, for at least ten years and found that those who ate the most amount of [chocolate](#) - an average of 7.5 grams a day - had lower blood pressure and a 39% lower risk of having a [heart attack](#) or stroke compared to

those who ate the least amount of chocolate - an average of 1.7 grams a day. The difference between the two groups amounts to six grams of chocolate: the equivalent of less than one small square of a 100g bar.

Dr Brian Buijsse, a nutritional epidemiologist at the German Institute of Human Nutrition, Nuthetal, Germany, who led the research said: "People who ate the most amount of chocolate were at a 39% lower risk than those with the lowest chocolate intakes. To put it in terms of absolute risk, if people in the group eating the least amount of chocolate (of whom 219 per 10,000 had a heart attack or stroke) increased their chocolate intake by six grams a day, 85 fewer heart attacks and strokes per 10,000 people could be expected to occur over a period of about ten years. If the 39% lower risk is generalised to the general population, the number of avoidable heart attacks and strokes could be higher because the absolute risk in the general population is higher." [2]

However, he warned that it was important people ensured that eating chocolate did not increase their overall intake of calories or reduce their consumption of healthy foods. "Small amounts of chocolate may help to prevent [heart disease](#), but only if it replaces other energy-dense food, such as snacks, in order to keep body weight stable," he said.

The people in the study were participants in the Potsdam arm of the European Prospective Investigation into Cancer (EPIC). They received medical checks, including blood pressure, height and weight measurements at the start of the study between 1994-1998, and they also answered questions about their diet, lifestyle and health. They were asked how frequently they ate a 50g bar of chocolate, and they could say whether they ate half a bar, or one, two or three bars. They were not asked about whether the chocolate was white, milk or [dark chocolate](#); however, the researchers asked a sub-set of 1,568 participants to recall their chocolate intake over a 24-hour period and to indicate which type of chocolate they ate. This gave an indication of the proportions that

might be expected in the whole study. In this sub-set, 57% ate milk chocolate, 24% dark chocolate and 2% white chocolate.

In follow-up questionnaires, sent out every two or three years until December 2006, the study participants were asked whether they had had a heart attack or stroke, information which was subsequently verified by medical records from general physicians or hospitals. Death certificates from those who had died were also used to identify heart attacks and strokes.

The researchers allocated the participants to four groups (quartiles) according to their level of chocolate consumption. Those in the top quartile, eating around 7.5g of chocolate a day, had blood pressure that was about 1mm Hg (systolic) and 0.9mm Hg (diastolic) lower than those in the bottom quartile. [3]

"Our hypothesis was that because chocolate appears to have a pronounced effect on blood pressure, therefore chocolate consumption would lower the risk of strokes and heart attacks, with a stronger effect being seen for stroke," explained Dr Buijsse.

This is, in fact, what the study found. During the eight years there were 166 heart attacks (24 fatal) and 136 strokes (12 fatal); people in the top quartile had a 27% reduced risk of heart attacks and nearly half the risk (48%) of strokes, compared with those in the lowest quartile.

The researchers found lower blood pressure due to chocolate consumption at the start of the study explained 12% of the reduced risk of heart attacks and strokes, but even after taking this into account, those in the top quartile still had their risk reduced by a third (32%) compared to those in the bottom quartile over the duration of the study.

Although more research needs to be carried out, the researchers believe

that flavanols in cocoa may be the reason why chocolate seems to be good for people's blood pressure and heart health; and since there is more cocoa in dark chocolate, dark chocolate may have a greater effect.

"Flavanols appear to be the substances in cocoa that are responsible for improving the bioavailability of nitric oxide from the cells that line the inner wall of blood vessels - vascular endothelial cells," said Dr Buijsse. "Nitric oxide is a gas that, once released, causes the smooth muscle cells of the blood vessels to relax and widen; this may contribute to lower [blood pressure](#). Nitric oxide also improves platelet function, making the blood less sticky, and makes the vascular endothelium less attractive for white blood cells to attach and stick around."

The authors of the study conclude: "Given these and other promising health effects of cocoa, it is tempting to indulge more in chocolate. Small amounts of chocolate, however, may become part of a diet aimed to prevent CVD [cardiovascular disease] only after confirmation by other observational studies and particularly by randomized trials."

Commenting on the research on behalf of the European Society of Cardiology (ESC), Frank Ruschitzka, Professor of Cardiology, Director of Heart Failure/Transplantation at the University Hospital Zurich, Switzerland, and a Fellow of the ESC, said: "Basic science has demonstrated quite convincingly that dark chocolate particularly, with a cocoa content of at least 70%, reduces oxidative stress and improves vascular and platelet function. However, before you rush to add dark chocolate to your diet, be aware that 100g of dark chocolate contains roughly 500 calories. As such, you may want to subtract an equivalent amount of calories, by cutting back on other foods, to avoid weight gain."

More information: [1] "Chocolate consumption in relation to blood pressure and risk of cardiovascular disease in German adults." European

Heart Journal. [doi:10.1093/eurheartj/ehq068](https://doi.org/10.1093/eurheartj/ehq068)

[2] Examples of absolute risk are given here to help with understanding the findings; however, the study itself only reports relative risk.

[3] mm Hg = millimetres of mercury (the measure for blood pressure).

Provided by European Society of Cardiology

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