

Eating cheese may offset blood vessel damage from salt

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Cheese lovers, rejoice. Antioxidants naturally found in cheese may help protect blood vessels from damage from high levels of salt in the diet, according to a new Penn State study.

In a randomized, crossover design study, the researchers found that when adults consumed a [high sodium diet](#), they also experienced [blood vessel dysfunction](#). But, when the same adults consumed four servings of [cheese](#) a day alongside the same high [sodium diet](#), they did not experience this effect.

Billie Alba, who led the study while finishing her Ph.D. at Penn State, said the findings may help people balance food that tastes good with minimizing the risks that come with eating too much salt.

"While there's a big push to reduce dietary sodium, for a lot of people it's difficult," Alba said. "Possibly being able to incorporate more dairy products, like cheese, could be an alternative strategy to reduce cardiovascular risk and improve vessel health without necessarily reducing total sodium."

While sodium is a mineral that is vital to the [human body](#) in small doses, the researchers said too much [dietary sodium](#) is associated with cardiovascular risk factors like [high blood pressure](#). The American Heart Association recommends no more than 2,300 milligrams (mg) of sodium a day, with the ideal amount being closer to 1,500 mg for most adults.

According to Lacy Alexander, professor of kinesiology at Penn State and another researcher on the study, previous research has shown a connection between [dairy products](#)—even cheeses high in sodium—and improved heart health measures.

"Studies have shown that people who consume the recommended number of dairy servings each day typically have lower [blood pressure](#) and better cardiovascular health in general," Alexander said. "We wanted to look at those connections more closely as well as explore some of the precise mechanisms by which cheese, a dairy product, may affect heart health."

The researchers recruited 11 adults without salt-sensitive [blood](#) pressure for the study. They each followed four separate diets for eight days at a time: a low-sodium, no-dairy diet; a low-sodium, high-cheese diet; a high-sodium, no-dairy diet; and a high-sodium, high-cheese diet.

The low sodium diets had participants consume 1,500 mg of salt a day, while the high sodium diets included 5,500 mg of salt per day. The cheese diets included 170 grams, or about four servings, of several different types of cheese a day.

At the end of each week-long diet, the participants returned to the lab for testing. The researchers inserted tiny fibers under the participants' skin and applied a small amount of the drug acetylcholine, a compound that signals blood vessels to relax. By examining how each participants' blood vessels reacted to the drug, the researchers were able to measure blood vessel function.

The participants also underwent blood pressure monitoring and provided a urine sample to ensure they had been consuming the correct amount of salt throughout the week.

The researchers found that after a week on the high sodium, no cheese diet, the participants' [blood vessels](#) did not respond as well to the acetylcholine—which is specific to specialized cells in the blood vessel—and had a more difficult time relaxing. But this was not seen after the high sodium, high cheese diet.

"While the participants were on the high-sodium diet without any cheese, we saw their blood vessel function dip to what you would typically see in someone with pretty advanced cardiovascular risk factors," Alexander said. "But when they consumed the same amount of salt, and ate cheese as a source of that salt, those effects were completely avoided."

Alba said that while the researchers cannot be sure that the effects are caused by any one specific nutrient in cheese, the data suggests that antioxidants in cheese may be a contributing factor.

"Consuming high amounts of sodium causes an increase in molecules that are harmful to blood vessel health and overall heart health," Alba said. "There is scientific evidence that dairy-based nutrients, specifically peptides generated during the digestion of dairy proteins, have beneficial antioxidant properties, meaning that they have the ability to scavenge these oxidant molecules and thereby protect against their damaging physiological effects."

Alba said that in the future, it will be important to study these effects in larger studies, as well as further research possible mechanisms by which dairy foods may preserve vascular health.

More information: Billie K Alba et al, Controlled Feeding of an 8-d, High-Dairy Cheese Diet Prevents Sodium-Induced Endothelial Dysfunction in the Cutaneous Microcirculation of Healthy, Older Adults through Reductions in Superoxide, *The Journal of Nutrition* (2019).
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