Study: Sodium-to-potassium ratio a key to heart health

Consuming twice as much potassium as sodium might halve your risk of dying from cardiovascular disease.

By Emily Sohn
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A new study suggests that consuming twice as much potassium as sodium can halve your risk of dying from cardiovascular disease. The study is the first to show that the ratio of these nutrients in your diet matters more than exactly how much you get of either one.

The best strategy for good health, experts are quick to stress, is to eat less sodium and more potassium. But the new research suggests that simply upping your intake of potassium can at least soften the blow of a high-sodium diet.

"Potassium and sodium are like peas in a pod, except they're in opposite pods," says epidemiologist Paul Whelton, president and chief executive of the Loyola University Health System in Chicago and one of the authors of the study. "This is the first study to show that the two together give you a benefit over and above what you can get with either one."

Between processed foods and restaurant meals, most Americans eat far too much sodium -- significantly above the 2,300 milligrams the Dietary Guidelines for Americans recommend as a maximum daily intake for adults. Excess sodium, according to plenty of large, well-designed studies, causes the body to retain fluids, which raises blood pressure and ups the risk of dying from heart disease.

Just as strong -- albeit less commonly known -- is the link between heart health and potassium. In 1997, a study published in the Journal of the American Medical Assn. compiled the results of 33 clinical trials and found that people who took potassium supplements lowered their blood pressure by 3/2 mm Hg. (Blood pressure is measured as two numbers that indicate how hard it is for the heart to pump blood through the blood vessels. Ideally, it should be 120/80 or less.) High blood pressure is a major risk factor for heart attacks and strokes.

That study was pivotal in influencing current dietary guidelines, which recommend that Americans get at least 4,700 mg of potassium daily -- about double the recommended maximum for sodium. Yet, according to nationwide nutritional surveys, the average American gets just 2,600 mg of potassium a day and 4,000 mg or more of sodium -- far more sodium than potassium, even though guidelines suggest we do the opposite.

Scientists have long suspected that the ratio of the two nutrients in our diets is important, but there hasn't been strong enough evidence to say for sure. In the new study, Nancy Cook, a statistician at Brigham and Women's Hospital and associate professor at Harvard Medical School in Boston, and colleagues were able to test the idea with data from two large trials originally designed to see how blood pressure responds to a variety of factors, such as diet and weight loss.

The studies involved thousands of people and took place in the late 1980s and early '90s. For either 18 months or three years, some participants were assigned to cut sodium intake by up to 35%. Others went along eating like they always did. A handful of times over the course of the study, participants provided all their urine over a 24-hour period. Then, by analyzing the urine, scientists could accurately determine what nutrients each person was eating. (Prior studies relied on people reporting everything they ate -- a method that is notoriously inaccurate.)

One earlier report from this project, published in the British Medical Journal in 2007, found that participants who had been instructed to reduce sodium intake, even for just a few years, were 25% less likely to die from cardiovascular disease 10 to 15 years later than were those who kept eating larger amounts of sodium.

In the current study, the researchers looked at the other group -- those who had continued to eat as they normally would. They found that people who ate more potassium tended to have a slightly lower long-term risk of death from heart disease.

But they also found that people who had consumed the highest levels of potassium and the lowest levels of sodium (about twice as much potassium as sodium) were 50% less likely to die of cardiovascular disease than those who ate the most sodium and the least potassium (about four times as much sodium as potassium).

The ratio of the two nutrients mattered more than the amount of either one when it came to predicting cardiovascular disease, the study found.

Scientists aren't sure how potassium dampens the heart-damaging effects of salt. One possibility, Cook says, is that potassium may prevent the body from absorbing as much sodium. But regardless of the mechanism, trying to boost your ratio is pretty much guaranteed to improve your health because you'll eat more fruits and vegetables, says Edgar Miller III, an epidemiologist at Johns Hopkins Medical University in Baltimore.

A banana has more than 400 mg of potassium, for example. There are more than 900 mg in a potato, nearly 950 mg in a cup of spinach, 600 mg in half a cup of raisins and 500 mg in an 8-ounce cup of orange juice.

A diet rich in fruits and vegetables delivers other health-enhancing properties, Miller says, including fiber and antioxidants. And filling up on fresh, whole foods may reduce the reliance on sodium-packed processed meals.

In that way, the new study supports the results of the landmark DASH trials, which in the 1990s found that even when people ate plenty of sodium they were able to lower their blood pressure by eating lots of fruits, vegetables, whole grains and low-fat dairy foods, and not a lot of red meat, sweets or saturated fats. "This provides further proof," says Eva Obarzanek, a registered dietitian and research nutritionist at the National Heart, Lung and Blood Institute, and one of the authors of the new study, "that sodium is bad and potassium is good."

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