# Is It True That Salt Is Bad for Your Heart?

Analysis by Dr. Joseph Mercola       ✔ Fact Checked      | April 20, 2022

## STORY AT-A-GLANCE

> "Conventional wisdom" states that a high-sodium diet will increase your blood pressure, thereby raising your risk for a cardiac event. However, this claim is largely based on uncontrolled case reports from the early 1900s

> A 2018 systematic review found no evidence of benefit from a low-sodium diet for those with heart failure

> The randomized controlled SODIUM-HF trial, published in April 2022, also found no benefit for patients with Class 2 or 3 heart failure, as lower sodium intake had no statistically significant impact on clinical events

> Contrary to popular belief, it's actually hard to consume harmful amounts of sodium, but it's easy to end up with too little. Symptoms of sodium deficiency include muscle fatigue, muscle spasm, cramps, heart palpitations, lethargy and confusion

> Low-salt recommendations rarely take coffee intake into account, even though coffee consumption is extremely common and will rapidly deplete your salt stores. Sweating will also eliminate salt from your body, so if you sweat a lot, you may get rid of more than you add back in if you're on a low-salt diet

"Conventional wisdom" states that a high-sodium diet will increase your blood pressure, thereby raising your risk for a cardiac event. This claim is largely based on uncontrolled case reports from the early 1900s,[1] and despite more rigorous studies finding no support for the low-sodium recommendation, the dogma around it has been hard to break through.

## No Evidence to Support Low-Sodium Diet

For example, in December 2018, a systematic review[2] of nine studies concluded there was no robust high-quality evidence available to either support or refute the use of a low-sodium diet for people with heart failure. Then, in April 2022, the results of the SODIUM-HF trial[3] were published.[4] As reported by Medscape:[5]

> "SODIUM-HF is a pragmatic randomized controlled trial that tested general advice on dietary sodium against a low-sodium diet of 1,500 mg daily ... Patients in SODIUM-HF had class II-III New York Heart Association heart failure ... average age 66 years, average left ventricular ejection fraction of 36%, good medical therapy.
>
> The study was carried out in 26 sites in six countries over six years ... The primary endpoint was a composite of all-cause death and hospitalization or emergency department visit for cardiovascular (CV) reasons."

Between baseline and the first 12 months of treatment, the median sodium intake decreased from 2,286 mg per day to 1,658 mg in the low sodium group, and from 2,119 mg per day to 2,073 mg among controls.

At the end of the six-year study, 15% of the low-sodium arm and 17% of controls had experienced cardiovascular-related admission to hospital, a cardiovascular-related emergency department visit, or died — a difference in incidence that did not meet statistical significance.

> **" In ambulatory patients with heart failure, a dietary intervention to reduce sodium intake did not reduce clinical events. ~ The Lancet "**

Interestingly, all-cause death was slightly higher in the low-sodium group at 6%, compared to 4% among controls, although this did not meet statistical significance either. As reported by Medscape:[6]

> *"The authors concluded with just one spin-free sentence: 'In ambulatory patients with heart failure, a dietary intervention to reduce sodium intake did not reduce clinical events.'"*

One shortcoming of the study that may have confounded results is the fact that the control group didn't consume very high amounts of salt. The median difference in intake between the two groups was only 415 mg per day. The average American consumes about 3 grams of salt per day, so the control group wasn't truly representative of the American public.

Another criticism has been that the enrolled patients weren't sick enough to benefit from a low-sodium diet. Some believe had they included patients with more severe heart failure, they might have found a benefit. Still, these shortcomings don't negate the results. In his Medscape review, Dr. John Mandrola notes:[7]

> *"SODIUM-HF is an ambitious trial looking at sodium restriction in different cultures. It showed that under current care, in a typical heart failure cohort, recommending a stricter low-sodium diet vs general advice did not make a difference in outcomes ... My takeaway is that we don't have to spend time and energy getting patients to adhere to a super-low-sodium diet."*

## Salt Deficiency Is a Real Problem

Contrary to popular belief, it's actually hard to consume harmful amounts of sodium, but it's easy to end up with too little. Symptoms of sodium deficiency include muscle fatigue, muscle spasm, cramps, heart palpitations, lethargy and confusion.

Sodium is an electrolyte (a substance that conducts electricity) and helps regulate the amount of water found inside and surrounding your cells. As an electrolyte, it's also important for the regulation of your blood pressure. If your salt level gets too low, you can end up chronically dehydrated. Many patients with high blood pressure are also prescribed diuretics, which worsens the situation.

Low-salt recommendations also rarely take coffee intake into account either, even though coffee consumption is extremely common and will rapidly deplete your salt stores. If you drink four cups of coffee in a day, you can easily expel more than 1 teaspoon of salt in your urine within four hours. Yet, you're being told to consume 1 teaspoon of salt (2,300 mg of sodium) per day or less.

If you're a coffee drinker and follow this advice, you can end up with a significant sodium deficiency within mere days, as your body is losing large amounts of salt. Sweating will also eliminate salt from your body, so if you sweat a lot, you may get rid of more than you add back in if you're on a low-salt diet.

## Historical Salt Intakes Were 10 Times Higher

So, the universal recommendation to restrict salt intake isn't a wise one. It also doesn't make much sense from historical and population perspectives. Historically, people consumed more than 10 times the amount of salt we consume today (as it was a primary food preservative).

In the 1600s in Sweden, it was estimated that the average person was consuming 100 grams of salt per day. Today, most people get 10 grams of salt per day or less (1 teaspoon of salt equates to 2,300 milligrams (mg) of sodium and the average American consumes about 3,400 mg of sodium per day). The emergence of high blood pressure in the early 1900s actually coincides with a significant reduction in salt intake as refrigeration replaced salt preservation.

Both the Japanese and South Koreans, whose life expectancies are among the longest in the world, also consume the highest amounts of salt. All of these data and more are detailed in "The Salt Fix: Why the Experts Got It All Wrong — and How Eating More Might Save Your Life," written by James DiNicolantonio, Pharm.D.

The idea that salt intake correlates with blood pressure was popularized by the Dietary Approaches to Stop Hypertension (DASH) study,[8] published in 1999. Lower salt intake was one of the dietary approaches employed in that study, but it wasn't the only one.

The DASH diet was also low in processed foods and sugars, and these may have a far greater impact on your blood pressure than salt.

## Low-Salt Recommendations May Do More Harm Than Good

According to DiNicolantonio, your blood pressure may indeed go down when you reduce your salt intake. The problem is that your total cholesterol to high-density lipoprotein (HDL) ratio, which is a much better predictor of heart disease than low-density lipoprotein (LDL), is worsened right along with it. Triglycerides and insulin are also increased.

So, overall, your heart disease risk increases rather than decreases, even though your blood pressure readings appear better. What's worse, salt deficiency also increases your chances of developing insulin resistance, because one of the ways in which your body preserves salt is by raising your insulin level. Higher insulin helps your kidneys retain more salt.

Insulin resistance, in turn, is a hallmark of not only heart disease but most chronic diseases. So, by not taking the whole disease picture into account, the low-salt diet advice may actually end up doing more harm than good. Unfortunately, as salt was vilified, sugar ended up getting a free pass.

Your salt status also directly controls your magnesium and calcium levels. If you do not get enough salt, your body not only starts pulling sodium from the bone, it also strips your bone of magnesium and calcium to maintain a normal sodium level.

Your body will also attempt to maintain sodium by decreasing the amount of sodium lost in sweat, excreting magnesium and calcium instead. Thirdly, low sodium will elevate aldosterone, a sodium-retaining hormone, which also reduces magnesium by shuttling it out through your urine.

A low-sodium diet is therefore one of the worst things you can do for your health, especially your bone and heart health, as magnesium is one of the most important minerals for biological function.

## Listen to Your Body

So, the take-away here is that there's really no reason to be concerned about getting too much salt in your diet. A 2017 study[9,10] confirmed your body maintains a relatively constant sodium balance regardless of your intake, and any excess is simply be expelled through your kidneys. According to DiNicolantonio, a person with healthy kidneys can consume at least 86 grams of salt per day.

Your body also has a built-in "salt thermostat" that basically tells you how much you need by regulating your craving for salt. So, learn to listen to your body and remember that if you sweat profusely, either through exercise or sauna use, for example, or drink caffeinated beverages, you automatically will need more than usual.

A number of medical conditions can also increase sodium loss or prevent your body from absorbing salt well, such as inflammatory bowel diseases, sleep apnea, adrenal deficiency, bariatric surgery, kidney diseases, hypothyroidism and celiac disease. So, if you have any of these, you may need a bit more salt in your diet to compensate.

All of that said, there are some salt-sensitive subpopulations that may need to limit their salt intake to 2,300 mg per day. This includes those with:

- Endocrine disorders

- High aldosterone levels

- Cushing's syndrome

- Elevated cortisol

- Liddle syndrome, a rare condition affecting about 1 in 1 million individuals, causing them to retain too much salt. If treated with amiloride, salt intake probably does not need to be restricted

## Your Sodium-Potassium Ratio Is Far More Important

While salt has been vilified as a cause of high blood pressure and heart disease, research shows the real key to normalizing your blood pressure is actually the ratio of sodium to potassium — not your sodium intake alone.[11]

Both salt and potassium are electrolytes, but while most of your potassium resides inside your cells, most of the sodium resides outside of your cells. Potassium works in your body to relax the walls of your arteries, keep your muscles from cramping and lower your blood pressure.[12,13,14,15]

As a general rule, you want to consume five times more potassium than sodium. If you eat a standard American diet of processed food, you're likely getting twice as much sodium as potassium. A simple way to check your ratio is to use my customized version of the free nutrient tracker, cronometer.com/mercola, which will calculate your sodium-to-potassium ratio automatically based on the foods you enter.

## Healthy Versus Unhealthy Salt

To reap the benefits of salt, make sure it's unrefined and minimally processed. One of my personal favorites is Himalayan pink salt, as it's also rich in naturally-occurring trace minerals needed for healthy bones, fluid balance and overall health. Another good choice is Redmond Real Salt which, like Himalayan salt, is mined from an ancient ocean salt deposit.

Table salt is not recommended, for a number of reasons. For starters, natural salt typically contains 84% sodium chloride and 16% naturally-occurring trace minerals, including silicon, phosphorous and vanadium.

Processed table salt, on the other hand, contains over 97% sodium chloride; the rest is man-made chemicals such as moisture absorbents and flow agents. A small amount of iodine may also be added. In recent years, researchers have also discovered that some 90% of table salts are contaminated with plastic.[16]

Besides these basic differences in nutritional content, the processing also radically alters the chemical structure of the salt. So, while you definitely need salt for optimal

health, not just any salt will do. What your body needs is natural, unprocessed salt, without added chemicals or plastic.

## Sources and References

- [1] American Journal of Medicine 2017; 130: 1011-1014
- [2] JAMA Internal Medicine 2018;178(12):1693-1700
- [3] Clinical Trials ID: NCT02012179
- [4] The Lancet April 9, 2022; 399(1033): 1391-1400
- [5, 6, 7] Medscape April 6, 2022
- [8] Cardiology Review September-October 1999; 7(5): 284-288
- [9] J Clin Invest. 2017;127(5):1944–1959
- [10] New York Times May 8, 2017
- [11] Advances in Nutrition, 2014; 5:712
- [12] Harvard Health Publications, January 23, 2017
- [13] Journal of the American Medical Association 1997;277(20):1624
- [14] Journal of Human Hypertension 2003; 17(7):471
- [15] BMJ 2013; 346:f1378
- [16] National Geographic October 17, 2018