Why a Low-Sodium Diet Might Wreck Your Health

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STORY AT-A-GLANCE

> Salt has been wrongly demonized as a major contributor to high blood pressure. Factors that play a significantly greater role include your sodium-to-potassium ratio, and a high-sugar, processed food diet

> Symptoms of sodium deficiency may include muscle fatigue, spasms, cramps and heart palpitations. Such symptoms may disappear by adding more salt to your diet

> In the 1600s, the average person was consuming up to 100 grams of salt per day from salted cod, herring and meats. Today, most people get 10 grams of salt per day or less, yet we have far higher rates of hypertension

> Low-sodium diets may lower blood pressure. However, this reduction in blood pressure may not necessarily translate into a reduction in cardiovascular events. In fact, the reduction in blood pressure may actually be harmful by potentially increasing heart rate, as well as the risk of falls and fractures

> Low-sodium diets can also worsen your total cholesterol to high-density lipoprotein ratio and induce insulin resistance increasing both triglycerides and insulin

> Subpopulations that may need to monitor their salt intake are listed, as are conditions that increase your need for salt by increasing sodium loss. The benefits of salt loading before exercise are also discussed

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Is salt bad for your blood pressure? James DiNicolantonio, Pharm.D., answers this and many other questions relating to salt in his book, "[The Salt Fix: Why the Experts Got It All Wrong — and How Eating More Might Save Your Life](#)." DiNicolantonio is a doctor of pharmacy, and it was during his work as a community pharmacist that his interest in this culinary staple emerged.

> "[P]atients … were put on this low-salt diet and were having all these symptoms like muscle fatigue, muscle spasms, cramps and heart palpitations. They said their doctors ordered them to not add salt to their food because they have high blood pressure. Yet they were suffering from all these new symptoms … symptoms of salt deficiency.
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> What I ended up doing is kind of pushing back and telling my patients, 'You know, you really need to go to your doctor's office. Tell them these symptoms that you're having, and get your blood-sodium levels drawn because you might be deficient in salt.'
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> Sure enough, these people were severely dehydrated. They had low sodium levels in the blood. Within a few days of just upping their salt intake, all of these symptoms went away. Right there, I knew that this low salt advice was just not panning out in the real world."

In some cases, the patients' sodium levels were so low their doctors actually ended up reducing or eliminating their prescription for diuretics, which are commonly prescribed for high blood pressure, and instructed them to start adding salt back to their food.

This is an important lesson because, while it's actually hard to consume harmful amounts of sodium, it's easy to end up with too little. These real-world experiences prompted DiNicolantonio to write his book, in which he also provides a historical perspective about the use of salt.

Historical Usage of Salt

Salt has been widely and regularly used throughout history. In fact, historically, people consumed over 10 times the amount of salt we consume today, as it was a primary food preservative before the invention of refrigerators. "The Japanese and South Koreans live the longest, yet they consume the highest amounts of salt," he says. "We know, even from a population perspective, it never made much sense to cut salt intake."

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), yet we struggle with far higher rates of hypertension than they did back then. The rampant increase in high blood pressure didn't really start until the early 1900s.

> *"The rise in hypertension, obesity and diabetes beginning in the early 1900s actually parallels a reduction in salt intake, because you had the refrigerator becoming very prevalent in the 1930s and '40s.*
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> *Salt intake has actually gone down while all these chronic diseases have gone up,"* DiNicolantonio says, adding that, *"Our bodies control its intake. There's never been any evidence that an increase in salt intake has ever paralleled any rise in any chronic disease."*

Does Salt Intake Correlate With Blood Pressure?

The idea that salt intake correlates with blood pressure was primarily popularized by the Dietary Approaches to Stop Hypertension (DASH) study, in which lower salt intake resulted in dramatic improvements in blood pressure. However, the DASH diet is not only low in salt, it's also low in processed foods and sugars, and these may have a far greater impact on your blood pressure than salt.

> *"Going back even further than that, there was a man named Lewis Dahl. He was basically the Ancel Keys of salt. He did virtually the same thing that Keys did in 1953, where he used five populations to draw a linear line saying that*

hypertension problems rose as salt intake increased. Keys did six countries … and showed this right-curving linear association with fat intake and deaths due to coronary disease.

I don't know what was in the water in the 1950s, but these doctors seemed to just pick five or six populations that fit their hypothesis, plotting it out to show their association — basically finding what they wanted to find. 'Intersalt' is one of the main studies published in 1988, where there were 52 populations.

Four of these populations were primitive cultures. They consumed virtually no salt, like the Yanomamo Indians and a few other types of unacculturated civilizations. When you remove those four tribal populations and look at just the 48 civilized countries, there was actually a reduction of blood pressure as salt intake increased. But that didn't get highlighted.

What got highlighted was the reduction in blood pressure as salt intake was lowered, but only if you included those four primitive cultures that also ate a ton of potassium, a ton of magnesium — they exercise more than us, they're lean, they don't drink alcohol, they don't consume sugar. When you remove those cultures, we actually found the opposite. The more salt consumed … there was a reduction in blood pressure."

Low-Salt Recommendations Likely 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.

> *"I've seen studies where going on low-salt diets are actually just as harmful as adding high amounts of sugar, in regards to the spikes in glucose levels you see after an oral glucose tolerance test,"* DiNicolantonio says.

> *"You can get 60 to 70 percent, even 100 percent increase in the area under the curve (AUC) of an oral glucose tolerance test by cutting your salt intake! This is a key mineral that we need to make sure that we're getting enough of. Otherwise, that could be contributing to insulin resistance and increase in fat storage."*

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

Today, most processed foods are loaded with added sugar and harmful industrially processed oils while containing virtually no healthy saturated fats or natural, unprocessed salt. "People were basically being told sugar was just energy. It wasn't harmful to your body," DiNicolantonio says. "Salt was the addictive white substance but, really, it was sugar all along."

Low-Sodium Diets Decimate Your Magnesium and Calcium Levels

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.

Magnesium insufficiency will also trigger muscle cramps. Interestingly, there's evidence to suggest having a healthy magnesium level can help mitigate some of the negative impacts that electromagnetic fields (EMFs) can have on your body. The reason for this is because EMFs activate voltage-gated calcium channels in your cells, and magnesium is a natural calcium-channel blocker.

DiNicolantonio specifies a low-sodium diet as one containing 1 teaspoon of salt or 2,300 mg of sodium per day or less. The American Heart Association recommends even lower amounts, suggesting people eat less than 1,500 mg a day — less than two-thirds of a teaspoon of salt. Low-salt recommendations 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 less than 1 teaspoon of salt per day. Following this advice can lead to significant sodium deficiency within mere days if 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.

Practical Recommendations

If you're eating a whole food diet, you're probably eating a very low-sodium diet, as unprocessed foods do not contain much, if any, salt. As a result, you may need to make sure you're salting your food. As for how much to add, the general recommendation is simply to salt to taste.

There's actually little concern about getting too much salt, because any excess will be expelled through your kidneys. According to DiNicolantonio, a person with healthy kidneys can consume at least 86 grams of salt per day.

> *"The problem is not getting enough. We can't manufacture an essential mineral. That's why all the studies show the highest risk of cardiovascular events and early mortality at a low salt intake, even versus a high-salt intake, even if you look at really high amounts of salt,"* DiNicolantonio says.

> *"I'm talking 7,000 to 8,000 mg of sodium per day. The rise in cardiovascular mortalities may be only around 20 percent versus 3,000 to 4,000 mg. If you go low-salt, the coronary heart disease mortality can be increased almost twofold."*

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.

Recommended Types of Salt

When adding salt to your food, be sure to use a natural, unprocessed salt. This is what your body actually needs. Processed table salt is a poor substitute that is best avoided. While I like pink Himalayan salt for its taste and micronutrient content, DiNicolantonio recommends Redmond Real Salt which, like Himalayan salt, is mined from an ancient ocean salt deposit.

> *"If you're getting sea salts from modern day oceans, you can get modern day pollution, including microplastics, nanoplastics and even traces of heavy metals. When you source your salt from an ancient ocean, you don't have to worry about that,"* he says. *"The other great thing about Redmond is that it has good amounts of calcium and iodine. Regular sea salt has basically no iodine in it.*

A lot of people are confused and actually think that sea salt has the highest amount of iodine because everybody knows seafood is high in iodine. But for some reason, the salt from modern day oceans, that sea salt does not have iodine in it …

If you look at the amounts of iodine in Himalayan salt, it can vary anywhere from less than 100 micrograms (mcg) per 10 grams of salt to up to 1,000 mcg. Redmond seems to come in at about 170 mcg of iodine per 10 grams of salt, which is just a little bit over what most people consume in a day.

You can basically get the recommended dietary allowance for iodine by consuming those types of salts. That's what's good about Himalayan and Redmond. It's that they do contain good amounts of iodine. What Redmond contains more of than Himalayan salt is calcium. You get about 40 mg of calcium and about 8 mg of magnesium. Himalayan salt has virtually no calcium and only about 1 mg of magnesium."

Subpopulations That May Need to Restrict Salt Intake

Overall, most people do not need to worry about consuming too much salt. 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

Conditions That Contribute to Sodium Loss

On the other hand, there are conditions that contribute to sodium loss or prevent your body from absorbing salt well, thereby raising your need for additional salt. This includes:

Inflammatory bowel diseases like Crohn's and ulcerative colitis	Bariatric surgery, and those who have had their intestine and/or colon removed
Sleep apnea, as the lack of breathing increases blood flow to the thorax and increases central blood pressure. This tricks your body into thinking it's overloaded in salt, triggering the excretion of salt. Sleep apnea can cause you to lose about 3,000 mg of sodium each night	Kidney diseases such as polycystic kidney disease and glomerulonephritis (interstitial damage to the tubules that causes salt loss)
Irritable bowel syndrome	Hypothyroidism (as thyroid hormones allow your kidneys to reabsorb salt)
Adrenal deficiency	Celiac disease

The Importance of Salt When Exercising

DiNicolantonio also recommends dosing yourself with some salt before exercise. This is what I call a golden pearl. I never previously recognized this but have started to incorporate it into my regimen.

> *"I call salt the sixth factor in fitness. When you exercise in the heat, there is a tenfold increase in heat stroke if you follow a low-salt diet,"* he warns.
> *"Everyone's trying to look for a way to increase blood circulation. Nothing's*

going to beat salt. What I do is I take about half a teaspoon of a Redmond Real Salt, and add just enough lemon juice to cover the [taste of the] salt … in 2 ounces of water. It tastes like a lemon shot when you do it that way.

You can even create like a keto-aid where you [mix] the salt with lemon juice, lime juice and water. You're creating like this lemon-lime Gatorade without the sugar. That's how some people get their dose of salt before they exercise.

The benefits are you're acutely increasing blood volume, you're increasing your blood circulation and you're reducing your heart rate, which is important in order to run longer, faster and harder. Also, salt is one of our best vasodilators. That allows heat to escape the body …

When you are exercising, your muscles are losing salt. That's why you get the muscle spasms and twitches. If you just add salt back to the diet, you can completely eliminate overtraining syndrome … Preloading with salt seems to work much better than trying to catch up [later]."

Pay Attention to Your Sodium/Potassium Balance

As you can see, there's really no justification for low-sodium recommendations, especially for heart health. On the contrary, restricting salt can have rather disastrous health consequences. In closing, I want to remind you to also pay attention to your sodium-to-potassium ratio, which has a far stronger correlation to blood pressure than does salt intake alone.

It's generally recommended that you consume five times more potassium than sodium, but most Americans eat twice as much sodium as potassium. If you're eating mostly processed foods and few fresh vegetables, your sodium-to-potassium balance is virtually guaranteed to be inversed. Imbalance in this ratio not only can lead to high blood pressure but also contribute to a number of other health problems, including but not limited to:

- Kidney stones

- Memory decline

- Osteoporosis

- Erectile dysfunction

- Stomach ulcers and stomach cancer

If this interview has piqued your curiosity and you want to learn more about the ins and outs of salt and why it's so important for optimal health, be sure to pick up a copy of DiNicolantonio's book, "**The Salt Fix: Why the Experts Got It All Wrong — and How Eating More Might Save Your Life**."