

Salt, Diabetes and High Blood Pressure

More than 70% of people with Type 2 [diabetes](#) have [high blood pressure](#). More than 85% of people with Type 2 diabetes consume too much salt on a daily basis. Coincidence? Is there a connection?

From a physiological perspective, Type 2 diabetics have high blood glucose levels, which thickens the blood and requires the heart muscle to work harder to push the thicker blood throughout the body. High blood glucose levels damage the kidneys, which can also lead to high blood pressure.

From a diet perspective, Type 2 diabetics eat more processed "dead" foods, fast foods, and junk foods that contain a lot of salt. So, it appears that salt should be avoided to prevent high blood pressure.

But, when the majority of Type 2 diabetics go on a low-salt diet, their blood pressure doesn't go down! Why? **Because the problem is not salt!** The real problem is a lack of eating potassium-rich foods such as vegetables, fruits, and beans!

I know this sounds crazy, but to help dispel the myth about salt and high blood pressure, we need to discuss what is "real" salt, the physiology of salt and high blood pressure; and, how science mistakenly connected salt to high blood pressure (hypertension).

Note: This myth about salt is similar to the myths about fat and [cholesterol](#), leading to the low-fat and low-cholesterol diets of the last part of the 20th Century. As we discovered, fat (alone) is not the culprit that made us fat. And, cholesterol is not the cause of heart disease -- it was a mistake (or lie) that has led to millions of people taking cholesterol-lowering (statin) drugs. But, let's focus on the salt-high blood pressure myth on this web page.

What is Salt?

The body needs salt. "Salt" is actually a chemical term for a substance produced by a reaction of an acid with a base. The terms "salt" and "sodium" are used interchangeably, but technically this is not correct.

"Salt" is sodium chloride, or, in chemistry terms, NaCl. By weight, "salt" is 40% sodium and 60% chloride. Sodium is an essential nutrient, a mineral that the body cannot manufacture itself but is required for life and good health.

Salt was seen as a valuable food and commodity for centuries. In fact, wars were fought over its possession and civilizations rose and fell in pursuit of what came to be called "white gold." In times past, common rock salt was given to the common people and the highly valued crystal salt, like Original Himalayan Crystal Salt®, was reserved for royalty.

Salt has a long history of use in rituals of purification, magical protection, and blessing. Salt has been used throughout the ages as a ward against negative energies or evil spirits. There are even Biblical references to salt. For example, in the New Testament, Matthew 15:3, Jesus speaking to his disciples, "You are the salt of the earth."

So, salt had a good reputation until the latter part of the 20th Century when so-called "experts" began telling us that salt was causing high blood pressure -- which led to the "low-salt" diet.

This was an major mistake! -- the real issue was *not* the salt -- it was the *over*-consumption of processed foods (which contain high levels of sodium) combined with the *under*-consumption of vegetables and beans (which contain high levels of potassium, magnesium, and zinc).

This led to the sodium-to-potassium ratio becoming excessively high. Instead of strictly reducing salt intake, a better strategy is to increase the intake of potassium-rich foods. This will trigger the cells to pump sodium out and potassium in via the "sodium-potassium pump". This pump is in the membranes of all body cells, and one of its most important functions is preventing cellular swelling. If sodium is not pumped out, water accumulates in the cell, causing it to swell and ultimately burst.

History: How Did Salt Become a Villain?

The first report of the link between salt and hypertension was reported in 1904. Ambard and Beujard reported that salt deprivation was associated with lowered blood pressure in hypertensive patients. Over the next 50 years, various animal models were examined to support the hypothesis of salt causing high blood pressure. In almost all of these studies huge amounts of refined salt were given to the animals to induce a hypertensive effect. The use of large amounts of a lifeless product devoid of minerals such as refined salt should have made the results of these studies suspect.

In the 1940s, a Duke University researcher named Walter Kempner, M.D., became famous for using salt restriction to treat people with high blood pressure. Later, studies confirmed that reducing salt could help reduce hypertension.

So, salt became Public Enemy No. 1 in the kitchens of the misguided and health-obsessed. Back in 1976, Jean Mayer, then president of Tufts University, called salt "the most dangerous food additive of all." Four years later, *The New York Times* linked excessive consumption of salt to high blood pressure, heart and kidney disease, and stroke.

The INTERSALT Trial of 1986 was the most popular single study that provided the "smoking gun" proving that salt = hypertension. The study looked at over 10,000 subjects from 52 centers in 39 countries. The authors looked at the relationship between electrolyte excretion (sodium in the urine) and blood pressure. This study showed a mild decrease in blood pressure (3-6mm Hg systolic and 0-3mm Hg diastolic) when there was a dramatic decrease in salt excretion.

Note: If the goal of Intersalt was to come up with a definitive answer to the question of salt-hypertension relationship, it failed to do so. If anything, it raised more questions, and clearly indicated that if such relationship exists at all, it is neither linear nor simple. For all that its data directly convey, the effect of salt intake on blood pressure doesn't seem to be a significant factor at the level of population.

But, the die had been cast. Salt was an evil thing to be avoided at all costs.

On the one side are those physicians who believe caution is the best policy until the data prove one way or the other that a low-sodium diet is beneficial; on the other are those physicians who do not support the conclusions of current data and worry about negative side effects from a low-sodium diet.

Salt's demonization by doctors had its roots in the early 1970s, when studies seemed to show a link between sodium intake and high blood pressure. As a result, doctors made the general recommendation that everyone should reduce their sodium intake. But by the mid-1990s newer studies were calling those data into question, including the [Journal of the American Medical Association's 1998 meta-analysis of 114 clinical trials](#) that did not support a general recommendation to reduce salt intake. Two years later, [another study in the journal Hypertension](#) concluded that "no single universal prescription for sodium intake can be scientifically justified."

"Better safe than sorry" is not science, but it may be fear-mongering, the specialty of the Washington, D.C.-based nutritional group called the Center for Science and the Public Interest. The CSPI continues to insist that "a diet high in sodium increases the risk or severity of high blood pressure, which increases the risk of heart attack and stroke. Everyone should eat less salt." (They're so unrelenting on this point, they've even sued the Food and Drug Administration over it.)

This isn't to say that salt is safe for everyone. Studies show that 30 percent of the Americans who have high blood pressure would greatly benefit from a low-sodium diet. But that's about 10 percent of the overall population -- the rest of us are fine with sodium. And drastically cutting out sodium may actually *hurt* some people.

"Nothing works for everybody. Low-sodium diets can be dangerous," says Dr. David Case, a hypertension specialist at Weill Medical College of Cornell University. "Clogged arteries have nothing to do with salt intake, though congestive heart disease does. Kidney disease is affected by salt intake, but healthy kidneys excrete excess salt. The bigger issue is what happens if people do restrict salt, which may make them more vulnerable to hemorrhaging, diarrhea, and water loss. There were some tragic results when some mothers restricted their infants' salt intake, which sent them into shock. Some even died."

What science really shows: Normally the kidneys control the level of salt. If there is too much salt, the kidneys pass it into urine. But when our salt intake levels are very high, the kidneys cannot keep up and the salt ends up in our bloodstream. Salt attracts water. When there is too much salt in the blood, the salt draws more water into the blood. **More water increases the volume of blood which raises blood pressure.**

Some people are more sensitive to salt than others. In some people too much salt will cause their blood pressures to rise, in others there will not be as large a change. About half of people are salt sensitive. African-Americans, the elderly and people with diabetes are more often salt sensitive. If you have high blood pressure, you may benefit from decreasing your salt intake.

But, large-scale scientific reviews have determined there's no reason for people with normal blood pressure to restrict their sodium intake.

It's been known for the past 20 years that people with high blood pressure who don't want to lower their salt intake can simply consume more potassium-containing foods. Why? Because it's really the balance of the two minerals that matters. In fact, Dutch researchers determined that a low potassium intake has the same impact on your blood pressure as high salt consumption does. And it turns out, the average person consumes 3,100 milligrams (mg) of potassium a day—1,600 mg less than recommended.

Does Salt Cause High Blood Pressure?

The Physiology of Salt

Eating too much processed food, many people accumulate more salt and water than their kidneys can handle. Some people have genes that control cellular channels, enzymes and hormones at various sites in the kidney, conserving salt to enable adaptation to the hot, dry savannah. In order to remain active, one had to control body temperature. If water and salt were scarce, the kidney would conserve salt to retain fluid used to coat the body with sweat during activity. As sweat evaporated from the skin, it would cool the skin and keep body temperature normal. Without sweating, the body would quickly overheat during activity.

However, those genes necessary in our early development mistakenly conserve salt regardless of the environment. As long as excessive salt is ingested, it will be disproportionately reabsorbed in about 20 percent of the population. Through a process known as osmosis, salt retains water. It also promotes thirst, as every bartender and movie theater proprietor knows.

Excessive salt keeps the circulatory volume higher than it should be, exerting excess fluid pressure on blood vessel walls. These walls react to this stress by thickening and narrowing, leaving less space for the fluid already cramped in the blood compartment, raising "resistance" and requiring higher pressure to move blood to the organs. The heart has to pump against this high pressure system.

Lifting free weights in the athletic center causes muscles to become harder and larger. This same phenomenon happens to the heart with one notable exception, there is no break. This 24/7 activity can cause the heart to enlarge dramatically, and dangerously. The kidney contains around one million tiny, delicate filters comprised of blood vessels. The increase in pressure transmitted to the kidneys damages its vascular system leading to a disorder known as "hypertensive nephrosclerosis," a major cause of kidney disease.

Essential Hypertension

This genetic disorder, essential hypertension, is present in approximately 65 million Americans, and while characterized by measurements over 140/90, cardiovascular risks are already associated with blood pressures greater than 115/75.

It is controlled by eating a potassium-rich diet, restricting salt or using a diuretic drug, and is more common in those whose ancestral origins are equatorial. Doctors tend to push the diuretic drugs, but, the best choice is a change in diet!

The Solution to the Problem of High Blood Pressure

A healthy diet with vegetables, fruits and legumes with salt reduction to roughly less than five grams (100 mmols sodium) substantially lowers blood pressure. Tribes in remote areas that ingest little salt in their diet have lower blood pressures. Around the world, lower salt usage is associated with lower pressure. Restricting salt is difficult because it is as much a preservative as a flavoring condiment.

According to the latest (real) science, a proper balance of sodium, in addition to potassium and magnesium, is more important than severely reducing or eliminating sodium completely to achieve a healthy body. Sodium, potassium and magnesium help to regulate fluid balance in the body and allow nutrients and oxygen to travel to their necessary destinations within the body.

To provide a better balance of these minerals, use **Himalayan salt** or organic sea salt, which has a sandy color and contains magnesium and other nutrients and is not overly-processed and refined like the traditional (white) table salt. Also, **flavor your food with garlic, onion, peppers, herbs,** and other organic spices.

More importantly, eat **potassium and magnesium-rich foods** such as vegetables, beans and fruits to naturally reduce and normalize the sodium level in the body.

Despite what banana-growers want you to think, a banana is not the best source for potassium. Also, a banana is not the best fruit for diabetics. A typical banana gives you just 490 mg of potassium. You'd have to eat 10 bananas to get the 5,000 mg a day, which most people need. And when you figure in the glycemic index (GI) of bananas, eating 10 a day would make you put on fat.

Instead, try an avocado, which will give you 1,483 mg of potassium with a much lower GI. But your best source of potassium is nuts. They are quite high in potassium and have a much lower glycemic index.

What else is a good source of potassium? Name any fruit. Most fruits are great sources of potassium.

Also, **avoid processed foods** such as canned tomato juice, soups, and lunch meats because they tend to contain high levels of sodium. Avoid or reduce the consumption of most **condiments, pickles, ham, bacon, salsa, cheese, cold cuts, olives, and broths**. Also, avoid **fast foods, junk food, and fried foods** (say goodbye to Kentucky Fried Chicken and Popeye's). And, be wary of some salt substitutes that may contain too much potassium chloride, which can cause numbness, irregular heartbeat, low blood pressure (dizziness, weakness, fatigue), coma, and, even a heart attack.

So unless you've got high blood pressure, the next time you're in the kitchen -- don't be afraid to pick up that saltshaker. Your taste buds will thank you.

Diabetes and High Blood Pressure

As previously mentioned, people with diabetes have a greater risk of developing [high blood pressure](#). Eating a high-calorie diet that is also high in sodium can increase the risk of kidney damage and eye damage.

Safe Sodium Intake and Blood Pressure Levels

If you have diabetes, your blood pressure would be too high at 130/80 mm Hg. If you have kidney problems, aim for 125/75. The American Association of Diabetes Educators advises that you reduce your daily sodium intake to no more than 2,400mg. That's about a teaspoon's worth. Cutting your salt intake by 8.5g each day could reduce your blood pressure by 7/3 mm Hg. In the "Journal of Human Hypertension" study, researchers say it takes about five weeks to see the full effect.

Major Sodium Food Sources

Americans get most of their sodium from bread, chicken and beef dishes, pizza, pasta, condiments, Mexican food, cheese, grain-based desserts, soups, cold cuts, sausage, hot dogs, bacon, and ribs. These foods contribute about 56 percent of the sodium in the average American's diet, or nearly 2,000mg a day. Watch out for salad dressings, soups and some cereals too.

Salt Alternatives and Lowering Sodium

A preference for salt can be trained, according to the Dietary Guidelines Advisory Committee. Once you cut down, you won't want as much. Your body only needs 180mg per day to balance fluids. Season your foods with fresh herbs. Taste food before adding salt, rinse canned vegetables and remove the salt shaker from the table.

Importance of Salt and Filtered Water

The combination of using authentic sea salt and drinking pure, filtered water is very therapeutic for the human body. But, avoid table salt and drinking tap water!

Salt is a vital substance for the survival of all living creatures, particularly humans. Water and salt regulate the water content of the body. Water itself regulates the water content of the interior of the cell by working its way into all of the cells it reaches. It has to get there to cleanse and extract the toxic wastes of cell metabolisms. Salt forces some water to stay outside the cells. It balances the amount of water that stays outside the cells.

There are two "oceans" of water in the body; one ocean is held inside the cells of the body, and the other ocean is held outside the cells. Good health depends on a most delicate balance between the volume of these oceans, and this balance is achieved by salt - unrefined salt.

When water is available to get inside the cells freely, it is filtered from the outside salty ocean and injected into the cells that are being overworked despite their water shortage. This is the reason why in severe dehydration we develop an edema and retain water. The design of our bodies is such that the extent of the ocean of water outside the cells is expanded to have the extra water available for filtration and emergency injection into vital cells. The brain commands an increase in salt and water retention by the kidneys. **This is how we get an edema when we don't drink enough water.**

Initially, the process of water filtration and its delivery into the cells is more efficient at night when the body is horizontal. The collected water, that mostly pools in the legs, does not have to fight the force of gravity to get onto the blood circulation. If reliance of this process of emergency hydration of some cells continues for long, the lungs begin to get waterlogged at night, and breathing becomes difficult. The person needs more pillows to sit upright to sleep. This condition is the consequence of dehydration. However, you might overload the system by drinking too much water at the beginning. Increases in water intake must be slow and spread out until urine production begins to increase at the same rate that you drink water.

When we drink enough water, we pass out a lot of the salt that was held back. This is how we can get rid of edema fluid in the body; by drinking more water. **Not diuretics, but more water!!** In people who have an extensive edema and show signs of their heart beginning to have irregular or very rapid beats with least effort, the increase in water intake should be gradual and spaced out, but not withheld from the body. Naturally, salt intake should be limited for two or three days because the body is still in an overdrive mode to retain it. Once the edema has cleared up, salt should not be withheld from the body.

Salt has many other functions than just regulating the water content of the body.

Vital Functions of Salt in the Body

Vital functions of salt in the human body include the following.

Salt is most effective in stabilizing irregular heartbeats and, Contrary to the misconception that it causes high blood pressure, it is actually essential for the regulation of blood pressure - in conjunction with water. Naturally the proportions are critical.

Salt is vital to the extraction of excess acidity from the cells in the body, particularly the brain cells.

Salt is vital for balancing the sugar levels in the blood; a needed element in diabetics.

Salt is vital for the generation of hydroelectric energy in cells in the body. It is used for local power generation at the sites of energy need by the cells.

Salt is vital to the nerve cells' communication and information processing all the time that the brain cells work, from the moment of conception to death.

Salt is vital for absorption of food particles through the intestinal tract.

Salt is vital for the clearance of the lungs of mucus plugs and sticky phlegm, particularly in asthma and cystic fibrosis.

Salt is vital for clearing up catarrh and congestion of the sinuses.

Salt is a strong natural antihistamine.

Salt is essential for the prevention of muscle cramps.

Salt is vital to prevent excess saliva production to the point that it flows out of the mouth during sleep. Needing to constantly mop up excess saliva indicates salt shortage.

Salt is absolutely vital to making the structure of bones firm. Osteoporosis, in a major way, is a result of salt and water shortage in the body. Twenty-seven percent of the body's salt is in the bones. Osteoporosis results when the body needs more salt and takes it from the body. Bones are twenty-two percent water. Is it not obvious what happens to the bones when we're deficient in salt or water or both.

Salt is vital for sleep regulation.

Salt is vital for the prevention of gout and gouty arthritis.

Salt is vital for maintaining sexuality and libido.

Salt is vital for preventing varicose veins and spider veins on the legs and thighs.

Salt is vital to the communication and information processing nerve cells the entire time that the brain cells work.

Sea salt contains about 80 mineral elements that the body needs. Some of these elements are needed in trace amounts. Unrefined sea salt is a better choice of salt than other types of salt on the market. Ordinary table salt that is bought in the super markets has been stripped of its companion elements and contains additive elements such as aluminum silicate to keep it powdery and porous. Aluminum is a very toxic element in our nervous system. It is implicated as one of the primary causes of Alzheimer's disease.

Salt Cravings

Salt cravings are a common occurrence and are usually not severe. There are many reasons for salt cravings and most are mild and can be treated easily. The most common reasons are: dehydration, vomit and diarrhea, excessive sweating, and Addison's disease.

Dehydration

Dehydration is the single most common cause of salt cravings. Dehydration is the loss of water from the body. If too much water is lost, the body will begin pulling the nutrients it needs from other sources. One of these nutrients is salt and this will cause a salt craving. This craving can be cured by drinking more water and can be prevented by getting the proper amount of water per day – at least 8 glasses.

Vomiting and Diarrhea

Vomiting and diarrhea are common conditions that usually go hand and hand with being sick. With these two conditions, the food enters the body and is not in there long enough to be digested because it is eliminated before it can be absorbed. With this elimination, the body is missing out on nutrients that the body needs. The body will crave these nutrients, such as

salt, to function properly. The cure for vomiting and diarrhea is to hydrate the body. The most common way to rehydrate is by drinking plenty of water. An alternative to water is to drink an electrolyte enriched drink such as a sports drink.

Excessive Sweating

Excessive sweating is another cause of salt cravings. When the body sweats too much, water is lost through the skin. When too much water is lost, a salt craving will occur. Anyone who has ever tasted sweat knows that it has a salty taste to it. To get rid of a salt craving due to excessive sweating, the body needs to be hydrated.

Addison's Disease

Addison's disease is a rare endocrine or hormonal disorder. This occurs when the adrenal glands do not produce enough of the hormone cortisol. This will cause the body to crave salt. Because of this condition, the salt craving may be a little harder to treat. The salt craving will most likely not be what is treated, but will be cured as a secondary effect of treating the disease.

A salt craving is a very common occurrence in the body. Most often the salt craving will be due to a mild and common condition such as dehydration. This is easy enough to be cured and prevented. Some serious conditions can cause salt cravings, and these need the help of a doctor to diagnose and cure. No matter what the cause of the salt craving, it needs to be addressed and tended to for the body to continue functioning properly.

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