

Pass the Salt

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When I was registering for my wedding (many, many years ago), I hesitated registering for the salt and pepper shaker. Although I knew I would use the pepper shaker, I was not so sure about the salt shaker. I never salt at the table and the only time I use salt in my cooking is when I bake. (Salt not only adds flavor but it also stalls the chemical process in baked goods.) Well meaning friends and family members reminded me that if I were ever to entertain, I would need to have them available to offer to my guests. After much consultation, I reluctantly added the salt and pepper shaker to my registry. I have them still, in their original box. I never took them out and never found the need to use them. In all my years of entertaining, no one ever asked me for the salt shaker. However, eventually I did splurge and buy a wonderful pepper mill. That way, my guests could enjoy the food I prepared accented with freshly ground peppercorn.

So what is the fuss about salt? Salt has had a long history with mankind. Salt has been the cause of war and been traded for its weight in gold. Salt was and still is used as a preservative for foods which allowed people to survive harsh winters and periods when food was scarce. The significance of salt is woven throughout our history as well as common language. Early Romans would typically add salt to their vegetables leading to the term, "salad." Because salt is a valuable commodity, it has been used as a form of currency. In addition, the word "salary" is derived from the word "salt." In ancient Greece, salves were purchased in exchange for salt, thus the expression, "not worth his (weight in) salt." Over time, the production of salt improved and exceeded demand. The value of salt has lessened but it still plays a very important role in our food supply and health.

Salt is composed of sodium and chloride. The nutrient of most concern to the health of individuals is sodium. Sodium is required for nerve and muscle functions. Sodium generates electrical impulses in nerve fibers signaling a message. Similarly, this impulse causes the muscle fibers to contract causing movement. Sodium also helps the body maintain fluid and electrolyte balance. Fluid is found within and outside of body cells. It is vital that the body maintains this fluid balance (in and outside of the cells). Fluid imbalance is analogous to the excess pressure you feel under water when you jump into the deep end of the pool. The deeper the water you go (meaning the more water that is around you), the more pressure you feel. Likewise, if there is too much fluid outside of the cell, the pressure can be significant enough to burst the cell. Similarly if there is too much fluid inside the cell, this will cause the cell to swell and eventually burst. The imbalance of fluids can be very damaging to body cells. That is why the body needs sodium to keep the fluid in balance.

Water will go where sodium goes. Thus, if there is a lot of sodium, you should expect a lot of fluid. (For example, if you eat a lot of salty foods one day, the next day you might experience a tightening of your shoes or that your rings are more snug on your fingers. The slight swelling is due to fluid retention from the excess salt.) So by controlling the amount of sodium, the body controls the amount of fluid within and outside of the cell (to maintain equilibrium) as well as in your blood. For example, when the blood volume (fluid) becomes too low, the adrenal glands release aldosterone. Aldosterone is a hormone that

causes the retention of sodium by the kidneys. This will then lead to a lower amount of urine output (and the retention of fluids) and eventually cause the blood volume to increase to a normal level. Under the right circumstances, the kidneys can also filter out electrolytes, such as sodium, from the blood causing the excretion of fluid (via urine) and lower the fluid volume. The body can move sodium (along with other electrolytes) in and out of cells to adjust the fluid concentration (to achieve fluid balance). Therefore, sodium plays an important role in our overall health and we simply cannot function without it.

So why was I so conflicted when registering for a seemingly harmless salt shaker? The fact is the typical American eats way too much salt. Based on the [National Health and Nutrition Examination Survey](#), in 2005-2006 the average intake of sodium is 3,436 mg/day. What may be surprising is that the human body only needs roughly 500 mg of sodium a day to maintain normal function. Therefore our average intake is approximately 7-times greater than what we need! In reality, it is very difficult to eat only 500 mg of sodium a day. Even unsalted fresh fruits and vegetables contain sodium. The natural sodium found in unadulterated foods contributes 12% of the sodium intake for the average individual. Seventy-seven percent of the sodium intake comes from processed foods (foods that come prepackaged). The rest comes from added salt, in our cooking or at the table. Knowing that it is impossible to avoid sodium in our diet, researchers have determined a more realistic recommendation for sodium intake. The [New Dietary Guidelines for Americans](#) states that adults should consume no more than 1,500 mg of sodium a day. This is actually lower than the 2,300 mg recommended in 2005. The reason for the further reduction is the current state of America's health.

What specifically happens when you eat too much sodium? As mentioned earlier, the more sodium there is in the body, the more fluid that will be retained. The higher fluid volume means higher blood volume. This increased blood volume makes the heart work harder in order to pump the blood throughout the whole body via the circulatory system. If the kidneys are unable to excrete the higher level of sodium (and therefore fluid), it will result in a rise in blood pressure. This can be illustrated if you think of a garden hose. The garden hose directs the flow of water from point A to point B similar to our blood vessels. Imagine what would happen to the garden hose if the faucet is turned on full blast, forcing more water through. The pressure inside the hose would increase (aka, higher blood pressure). Over time (years), the stability of the hose could erode, resulting in a weaker hose. The hose may tear, rip or even burst causing water to leak and reduce (if not cut off) the flow of water (and similarly, blood and the nutrients) to other areas. In addition, sodium also causes the arterioles to constrict. Arterioles are tiny blood vessels that dilate and constrict to help regulate blood pressure and the flow of blood. When sodium causes the arterioles to constrict, this can lead to more resistance in the blood flow, especially blood flow back to the heart. This further compounds and elevates the blood pressure.

It is important to note that high blood pressure is not caused by stress or high tension. Stress can temporarily cause a rise in blood pressure; however, it does not maintain this elevation once the stress is removed. In addition, many "calm" individuals can develop high blood pressure and stress management techniques have not been shown to reduce the development of high blood pressure.

Some individuals are more sensitive to the effect of excess sodium from the diet. The sensitivity seems to increase with age for a majority of the population. Although there is

no “test” available to identify who is “sodium sensitive,” there are specific risk factors. People with an unhealthy body weight, family history of high blood pressure, high resting heart rate, and/or elevated blood pressure readings are most at risk for sodium sensitivity and high blood pressure. For these individuals, lowering their sodium intake should reduce their blood pressure.

When blood pressure is measured, two numbers are read. Systolic blood pressure (the first number) is the pressure within your blood vessels when the heart is pumping (beating). The diastolic pressure is the pressure when the heart is at rest. High blood pressure (or hypertension) is defined as having a systolic blood pressure of greater than or equal to 140 mm Hg or a diastolic blood pressure of greater than or equal to 90 mm Hg in more than one measurement. Blood pressure may increase or decrease throughout the day, depending on your activity and/or other external contributors. High blood pressure is not diagnosed until you have two or more readings that are consistently high.

High blood pressure can lead to many health problems. High blood pressure is known as the “silent disease” because people can be symptomless until it is too late and after too much damage has been done. As mentioned, the stress and pressure in the blood vessel from high blood pressure can cause the vessel to weaken and/or harden preventing the normal flow of blood. This can lead to blockage of the blood flow or internal bleeding, preventing the delivery of the needed nutrients to the rest of the body. The smaller blood vessels are more sensitive to the effects of high blood pressure. These small blood vessels are in essential areas like the kidneys, eyes and the brain. It is common to see kidney failure, heart failure, stroke, or even blindness from long term high blood pressure due to the damage done on these tiny blood vessels. High blood pressure can also lead to congestive heart failure. When the pressure is increased, the heart is forced to work harder in order to pump the blood to the rest of the body. Over time, the heart muscle could enlarge and be less efficient (at pumping the blood out of the heart) due to the excessive workload.

The American Heart Association reports that one out of every three adults has high blood pressure. Unfortunately only 77% of these individuals are aware that they have high blood pressure. That means over 20% of individuals are not seeking medical guidance and are not taking any precautions against this disease. Health experts recommend not gambling to see if you develop high blood pressure before taking action. Deaths from high blood pressure have increased 20% over the last ten years. Therefore the recommendation for sodium reduction will benefit everyone.

What can you do to reduce your sodium intake? Well, perhaps it is time to put that salt shaker away. The less salt is added to food, the less it will be consumed. You can also learn to enjoy less salt. The body will adjust and adapt to the lower salt flavor and you can begin to appreciate the natural taste of food (without the added salt). This “salt weaning process” could take 8-12 weeks. Other suggestions include eating out less and eating less processed foods. Restaurants prepare foods with lots of flavor in hopes that you will come back for more. Be aware of this when you choose to dine out. You can always be your own advocate and ask the chef to “hold the salt” when preparing your meal.

Processed foods are the main contributor of sodium in our diet. Processed food means eating anything that comes in a box, bag, or can. It is also important to read the nutrition

label as sodium content is listed on every food label. You can also read the ingredient list to look for any hidden sodium. “Soda,” as in baking soda or sodium bicarbonate is a source of sodium. One teaspoon of baking soda contains 1,000 mg of sodium. (One teaspoon of salt contains 2,300 mg of sodium.) Monosodium glutamate, sodium citrate, garlic salt, celery salt, soy sauce, baking powder all contain sodium. What may be surprising is the fact that many medications may also contain sodium. Always check with the pharmacist for the sodium content and in some situations, lower sodium version may be available.

The [food labeling law](#) also has very strict guidelines for sodium labels. The following is the definition of their sodium labeling terms:

Sodium free – less than 5 mg of sodium per serving

Very low-sodium – 35 mg or less per serving

Low-sodium – 140 mg or less per serving

Reduced sodium – usual sodium level is reduced by 25% from the original

Unsalted, no added or without added salt – made without the salt that is normally used but still contains the sodium that’s a natural part of the food itself.

(Source: American Heart Association)

Other ways of reducing the sodium intake include:

- Opt for fresh or frozen foods. Or choose canned food items without added salts. Sodium is used to smoke and cure meats and vegetables (e.g., pickles). It is also used in cheese, sauces and canned foods as a flavoring and preservative.
- Choose unsalted nuts or seeds, dried beans, peas and lentils. By themselves, these foods are very low in sodium.
- Choose lower salt version of snack foods (chips, pretzels, etc.)
- Avoid adding salt to your recipes. Many baked goods can be prepared with half the salt or even no salt.
- Select unsalted, lower sodium, fat-free foods. This is especially true for soups and broth which are typically high in sodium.
- Select fat-free or low-fat milk, low-sodium, low-fat cheeses and low-fat yogurt.
- Learn to use spices and herbs to enhance the taste of your food. Limit use of condiments. Add fresh lemon juice instead of salt to fish and vegetables.
- Be your own advocate when eating out. Work with the chef and ask for your dish to be prepared without salt.
- Consider removing the salt shaker. Use the pepper shaker or mill.

In order to lower the intake of sodium, it is important to know the sodium content of various foods. The following table lists the sodium content of some common foods (source: USDA National Nutrient Database for Standard Reference)

Food Item	Serving Size	Amount of Sodium per Serving (in mg)
Apple, raw with skin	1 medium apple	28
Bagels, cinnamon-raisin	4” bagel	287
Banana, raw	1 medium	1
Beans, baked, canned	1 cup	856

Beans, black, boiled without salt	1 cup	2
Beans, red kidney, canned	1 cup	873
Beans, green, frozen	1 cup	12
Beef, chuck, roast, braised	3 oz	54
Beef, cured, corned, canned	3 oz	856
Beef, ground 85% lean, broiled	3 oz	61
Biscuits, refrigerated dough, baked	2-1/2" biscuit	325
Blackberries, raw	1 cup	1
Bologna, beef and pork	2 slices	417
Bread, whole wheat	1 slice	148
Breakfast: biscuit with egg and sausage	1 biscuit	1141
Breakfast: French toast with butter	2 slices	513
Broccoli, raw	1 cup	29
Cake, choc with choc frosting	1 piece	214
Cola	12 fl oz	15
Carrot, raw	1 cup	76
Cauliflower, raw	1 cup	30
Celery, raw	1 cup	96
Cereal: Cheerios	1 cup	213
Cereal: Kix	1 1/3 cup	267
Cereal: Total Raisin Bran	1 cup	239
Cereal: Wheaties	1 cup	218
Cereal: Special K	1 cup	224
Cereal: Kellogg's Frosted Mini-Wheats	1 cup	5
Cereal: Life	3/4 cup	164
Cheese: cheddar	1 oz	176
Cheese: cottage	1 cup	851
Cheese: mozzarella, part skim	1 oz	150
Cheese: parmesan	1 tbsp	76
Cheese: American, pasteurized	1 oz	422
Chicken: breast, roasted	1/2 breast	64
Coffee, brewed	6 fl oz	4
Cookie: choc chip	1 cookie	30
Cookie: Oreo type	1 cookie	48
Corn, boiled	1 ear	13
Corn, canned	1 cup	571
Danish, cheese	1 each	320
Doughnut, cake-type	1 medium	257
Egg, fried	1 large	55
Fast food: burrito, beans and meat	1 burrito	668
Fast food: pepperoni pizza	1 slice	267
Fast food: cheeseburger (single patty)	1 burger	1108
Fast food: chicken fillet sandwich	1 sandwich	957
Fast food: fish sandwich	1 sandwich	939
Fast food: hotdog, plain	1 sandwich	670
Fast food: corn dog	1 corn dog	973
Fast food: nachos with cheese	6-8 nacho chips	816

Fast food: French fries	1 medium	265
Fast food: cold cuts submarine	6" roll	1651
Fast food: tuna salad submarine	6" roll	1293
Fast food: taco	1 large	1233
Fish: cod, baked	3 oz	77
Fish: pickled herring	3 oz	740
Fish: salmon, baked	3 oz	56
Grapes, raw	1 cup	3
Gravy: mushroom, canned	¼ cup	340
Ham	2 slices	739
Ice cream	½ cup	50
Lettuce: romaine, raw	1 cup	4
Milk, low fat	1 cup	107
Milk, nonfat	1 cup	100
Muffin, blueberry	1 muffin	255
Mushroom, canned	1 cup	663
Mushroom, raw	1 cup	3
Nuts: almonds	1 oz	0
Nuts: cashew, dry roasted, salted	1 oz	181
Peanut butter with salt	1 tbsp	78
Peanuts, dry-roasted, salted	1 tbsp	73
Peanuts, dry-roasted without salt	1 tbsp	2
Pickle, cucumber, dill	1 pickle	833
Potatoes, boiled, no salt	1 medium	7
Potatoes, mashed	1 cup	634
Rice: brown, cooked	1 cup	10
Rice: white, cooked	1 cup	5
Salami: dry	2 slices	402
Sauce: spaghetti/marinara	1 cup	1203
Sauce: soy	1 tbsp	902
Sauerkraut, canned	1 cup	1560
Soup: tomato, canned	1 cup	744
Water, municipal	1 cup	5

To further reduce the risk for hypertension, maintain a healthy body weight (lose weight if needed), participate in regular physical activity (with the emphasis on “regular” which is not to be confused with “sometimes” or “every now and then”), and eat a healthy diet filled with fresh fruits and vegetables and foods rich in magnesium, calcium and potassium. Studies have shown that these minerals are helpful in the management of blood pressure.

Next time you reach for the salt shaker, recall that your body has most likely received enough sodium from the various foods that you eat. Excess sodium in your diet may lead to a lifetime of poor health. Instead, reach for the pepper mill or other non-sodium seasonings to spice up your food. Learn to enjoy and appreciate the natural flavors of food instead of overpowering them with a heavy dose of salt. Simply put, there is no time like the present to pass - on the salt.

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