

Sodium in the Diet

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Sodium is a part of everyone's diet, but how much is too much? Under ideal conditions, the minimum sodium requirement is about 1,500 milligrams (mg) of sodium each day. This is less than 1 teaspoon of table salt. The maximum recommended level of sodium intake is 2,300 mg per day. On average, American men consume between 3,100 and 4,700 mg of sodium per day, while women consume between 2,300 and 3,100 mg (due to their lower calorie intake, not because of restricting sodium).

Sodium intake is one factor involved in the development of high blood pressure, otherwise known as hypertension. Hypertension tends to develop as people age. Some individuals are "salt sensitive," so reducing intake of sodium helps to reduce blood pressure levels. A high intake of sodium early in life might weaken genetic defenses against developing high blood pressure. Experts recommend not to wait and see if you develop hypertension, but to reduce sodium intake while blood pressure is still normal. This may decrease your risk of developing hypertension.

Other important considerations are healthful eating, maintaining ideal body weight, physical exercise, stress management and the amount of mono- and polyunsaturated fatty acids in the diet. Foods rich in calcium, magnesium and potassium are strongly recommended as protective measures against hypertension.

For people who already have hypertension, following an overall eating plan called DASH (Dietary Approaches to Stop Hypertension) and restricting sodium intake to 1500mg per day may be useful for lowering blood pressure. Recommended by the American Heart Association and the National

Cancer Institute, the DASH diet is lower in fat, saturated fat, cholesterol, and sodium, and higher in potassium, magnesium, and calcium than the typical American diet. For more information about the DASH eating plan or diet and hypertension in general see fact sheet 9.318, *Diet and Hypertension* and 9.374, *DASHing to Lower Blood Pressure*.

The following information describes the need for sodium in the diet, discusses food labeling for sodium, compares the sodium content of some common foods, and suggests ways to reduce the amount of sodium in the diet.

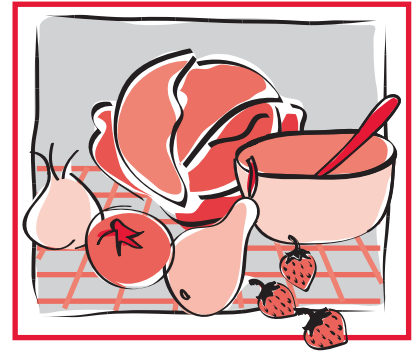
Why Is Sodium Needed?

Sodium has an important role in maintaining the water balance within cells and in the function of both nerve impulses and muscles. Any extra sodium is excreted by the kidneys. Consuming excess sodium may lead to edema or water retention. Women who consume excess sodium may be at higher risk for developing osteoporosis even if calcium intake is adequate. Some evidence suggests that for each teaspoon of salt (2,000 mg of sodium) consumed, considerable calcium is excreted in the urine.

Athletes and heavy laborers are sometimes concerned about not getting enough sodium to replace what is lost through perspiration. However, salt tablets are not recommended. They may increase dehydration and actually lower performance. Sodium losses are easily replenished at the next meal.

Where is Sodium Found?

Many people think of salt and sodium as being the same thing, but they are not. Table salt is 40 percent sodium and 60 percent chloride. It is the sodium portion of salt that is important to people concerned about high blood pressure. Keep in mind that some sodium is naturally present in most foods. See Table 1.



Quick Facts

- Sodium is one factor in the development of high blood pressure.
- Sodium is a component of salt; table salt is 40 percent sodium and 60 percent chloride.
- Most foods contain some sodium because it is naturally present.
- Several food industries are trying to find methods to decrease sodium in the food while ensuring its safety.
- The maximum recommended level of sodium intake is 2,300 mg per day.

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Table 1. Sodium comparisons.

Little	Low	More	High
Apple, 1 – 2 mg	Applesauce, 1 c. – 6 mg	Apple pie, 1/8, frozen – 208 mg	Apple pie, 1, fast food – 400 mg
Low sodium bread, 1 slice – 7 mg	Bread, 1 slice, white – 114 mg	Pound cake, 1 slice – 171 mg	English muffin, 1 whole – 203 mg
Vegetable oil, 1 tbsp. – 0 mg	Butter, 1 tbsp., unsalted – 2 mg	Butter, 1 tbsp., salted – 116	Margarine, 1 tbsp. – 140 mg
Chicken, 1/2 breast – 69 mg	Chicken pie, 1, frozen – 907 mg	Chicken noodle soup, 1 c. – 1,107 mg	Chicken dinner, fast food – 2,243 mg
Fresh corn, 1 ear – 1 mg	Frozen corn, 1 c. – 7 mg	Corn flakes, 1 c. – 256 mg	Canned corn, 1 c. – 384 mg
Cucumber, 7 slices – 2 mg	Sweet pickle, 1 – 128 mg	Cucumber w/salad dressing – 234 mg	Dill pickle, 1 – 928 mg
Pork, 3 oz. – 59 mg	Bacon, 4 slices – 548 mg	Frankfurter, 1 – 639 mg	Ham, 3 oz. – 1,114 mg
Lemon, 1 – 1 mg	Catsup, 1 tbsp. – 156 mg	Soy sauce, 1 tbsp. – 1,029 mg	Salt, 1 tsp. – 1,938 mg
Potato, 1 – 5 mg	Potato chips, 10 – 200 mg	Mashed potatoes, instant, 1 c. – 485 mg	Potato salad, 1/2 cup – 625 mg
Plain yogurt, 1 c. – 105 mg	Milk, 1 c. – 122 mg	Buttermilk, 1 c. – 257 mg	Choc. pudding, 1/2 c. instant – 470 mg
Steak, 3 oz. – 55 mg	Corned beef, 3 oz. – 802 mg	Jumbo burger, fast food – 990 mg	Meat loaf, frozen dinner – 1,304 mg
Tomato, 1 – 14 mg	Tomato juice, 1 c. – 878 mg	Tomato soup, 1 c. – 932 mg	Tomato sauce, 1 c. – 1,498 mg
Tuna, fresh, 3 oz. – 50 mg	Tuna, canned, 3 oz. – 384 mg	Tuna pot pie, 1 frozen – 715 mg	Fish sandwich, 1, fast food – 882 mg
Peanuts, unsalted, 1 c. – 8 mg	Peanut butter, 1 tbsp. – 81 mg	Peanut brittle, 1 oz. – 145 mg	Dry roasted peanuts, salted, 1 c. – 986 mg
Low sodium cheddar, 1 oz. – 6 mg	Cheddar cheese, 1 oz. – 176 mg	Cottage cheese, 1/2 cup – 257 mg	American cheese, 1 oz. – 406 mg
Water, 8 oz., tap – 12 mg	Club soda, 8 oz. – 39 mg	Antacid in water – 564 mg	Beef bouillon, 8 oz. – 1,152 mg

Most of the sodium in processed foods is added to preserve or flavor them. Salt is the major source of this sodium. Salt is added to most canned and some frozen vegetables, smoked and cured meats, pickles and sauerkraut. It is used in most cheeses, sauces, soups, salad dressings and many breakfast cereals. It is also found in many other ingredients used in food processing. The food industry is trying to find ways to decrease sodium while ensuring food safety.

Watch out for commercially prepared condiments, sauces and seasonings when preparing and serving foods for you and your family. Many, like those in Table 1, are high in sodium.

Salt-Sodium Conversions

The link between salt and sodium may be a little hard to understand at first. If you remember that one teaspoon of salt provides 2,000 milligrams of sodium, however, you can estimate the amount of sodium that you add to foods during cooking and preparation, or even at the table.

- 1/4 tsp. salt = 500 mg sodium
- 1/2 tsp. salt = 1,000 mg sodium
- 3/4 tsp. salt = 1,500 mg sodium
- 1 tsp. salt = 2,000 mg sodium

Table 2. Some high-sodium condiments.

Onion salt	Soy sauce
Celery salt	Steak sauce
Garlic salt	Barbeque sauce
Seasoned salt	Catsup
Meat tenderizer	Mustard
Bouillon	Worcestershire sauce
Baking powder	Salad dressings
Baking soda	Pickles
Monosodium glutamate (msg)	Chili sauce
	Relish

Sodium Labeling

Nutrition and ingredient labels on foods can show you the major sources of sodium in your diet and help you get an idea of your sodium intake.

Nutrition labels list the Daily Value (DV) for specific ingredients, including sodium. The DV for sodium is 2,400 mg. The sodium content of the food is listed in mg and as a percent of the daily value. The amount of sodium listed per serving includes sodium naturally present in the food as well as sodium added during processing.

Ingredients for all foods must be listed on the label, including standardized foods. Ingredients are listed in descending order by weight. Salt is the major, but not the only, source of sodium in food products. Any ingredient that has sodium, salt or soda as part of its name (monosodium glutamate, baking soda, seasoned salt) contains sodium. Soy sauce and other condiments used as ingredients also contribute sodium.

Example – INGREDIENTS: Potatoes, vegetable oil, whey, **salt**, dried milk solids, sour cream, **onion salt**, **monosodium glutamate**, dried parsley, lactic acid, **sodium citrate**, artificial flavors.

This food contains four sodium-containing ingredients (represented in bold above). Salt is the fourth ingredient by weight. Therefore, this product is probably high in sodium.

Specific health claims can be made about sodium for food products that meet certain requirements. For example, “A diet low in sodium may reduce the risk of high blood pressure, a disease associated with many factors.” In order to make a health

claim about sodium and hypertension (high blood pressure), the food must be low or very low in sodium. The following terms describe products that help reduce sodium intake:

Sodium free	Less than 5 mg per serving.
Very low sodium	35 mg or less per serving and, if the serving is 30 g or less or 2 tablespoons or less, per 50 g of the food.
Low sodium	140 mg or less per serving and, if the serving is 30 g or less or 2 tablespoons or less, per 50 g of the food.
Reduced or Less sodium	At least 25 percent less per serving than the reference food.

Steps to Reduce Sodium

One of the Dietary Guidelines for Americans is to avoid too much sodium. Use the following suggestions as starting points to reduce sodium in your diet.

- Cover up some of the holes on the salt shaker or take it off the table. Learn to enjoy food’s natural taste.
- Use more fresh fruit, vegetables and meat. The more processed the food is, the more sodium it may contain. (See Table 1.)
- Use canola oil or olive oil instead of butter or margarine in cooking.
- Check food labels for the words salt or sodium. Salt often is used as a preservative or flavoring agent. (See Table 2.)
- Season foods with herbs and spices rather than salt. (See Table 3.)

Nutrition Facts

Serving Size ½ cup (114g)
Servings Per Container 4

Amount Per Serving

Calories 90 Calories from Fat 30

	% Daily Value*
Total Fat 3g	5%
Saturated Fat 0g	0%
Cholesterol 0mg	0%
Sodium 300mg	13%
Total Carbohydrate 13g	4%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 3g	

Vitamin A 80% • **Vitamin C** 60%
Calcium 4% • **Iron** 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories:	2,000	2,500
Total Fat	Less than		65g	80g
Sat Fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Total Carbohydrates				
Dietary Fiber			25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

- Do not use salt substitutes, especially those that contain potassium, without first talking to your doctor.
- Check with your doctor or pharmacist for the sodium content of medications, especially antacids, cough medicines, laxatives and pain relievers.
- Try products such as low or reduced sodium to curb sodium intake. Shop carefully. These products can be more expensive. Make sure the reduction in sodium justifies the added cost.
- Plan meals that contain less sodium. Try new recipes that use less salt and sodium-containing ingredients. Adjust your own recipes by reducing such ingredients a little at a time. Don't be fooled by recipes that have little or no salt added but call for ingredients like soups, bouillon cubes or condiments that do.
- Make your own condiments, dressings and sauces and keep sodium-containing ingredients at a minimum.
- Cut back on salt used in cooking pasta, rice, noodles, vegetables and hot cereals.
- Taste your food before you salt it. If, after tasting your food, you must salt it, try one shake instead of two.
- If using canned food, rinse in water to remove some of the salt before preparing or serving.

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Figure 1: Part of a nutrition label seen on foods.

See Table 3,
page 4.

Table 3. Seasoning without your salt shaker with herbs and spices.**For Appetizers**

Hors d'oeuvres	Chervil, oregano, paprika, parsley
Cheese dips and spreads	Basil, chervil, dill weed, marjoram, oregano, sage, parsley, summer savory, tarragon
Devised or stuffed eggs	Curry powder, dill weed, summer savory, tarragon
Dips	Curry powder, oregano, chervil, parsley
Mushrooms	Oregano, marjoram
Seafood cocktails and spreads	Basil, dill weed, thyme, bay leaves, tarragon

For Vegetables

Asparagus	Lemon peel, thyme
Broccoli	Lemon juice, onion
Brussels sprouts	Lemon juice, mustard
Cabbage	Dill weed, caraway seeds, oregano, lemon juice, vinegar, onion, mustard, marjoram
Carrots	Marjoram, ginger, mint, mace, parsley, nutmeg, sage, unsalted butter, lemon peel, orange peel, thyme, cinnamon
Cauliflower	Rosemary, nutmeg, tarragon, mace
Celery	Dill weed, tarragon
Cucumbers	Rosemary, onion
Green beans	Basil, dill weed, thyme, curry powder, lemon juice, vinegar
Peas	Mint, onion, parsley, basil, chervil, marjoram, sage, rosemary
Potatoes	Bay leaves, chervil, dill weed, mint, parsley, rosemary, paprika, tarragon, mace, nutmeg, unsalted butter, chives
Spinach	Chervil, marjoram, mint, rosemary, mace, nutmeg, lemon, tarragon
Squash	Basil, saffron, ginger, mace, nutmeg, orange peel
Tomatoes	Basil, bay leaves, chervil, tarragon, curry powder, oregano, parsley, sage, cloves
Zucchini	Marjoram, mint, saffron, thyme

For Entrees

Eggs and cheese	Curry powder, marjoram, mace, parsley flakes, tumeric, Basil, oregano, rosemary, garlic, mustard, mace, ginger, curry powder, allspice, lemon juice, pepper
Fish and shellfish	Basil, bay leaves, chervil, marjoram, oregano, parsley, rosemary, sage, tarragon, thyme, lemon peel, celery seed, cumin, saffron, savory, dry mustard
Poultry	Basil, saffron, bay leaves, sage, dill weed, savory, marjoram, tarragon, oregano, thyme, rosemary, paprika, curry powder, orange peel, cranberries, mushrooms
Pork	Cloves, garlic, ginger, mustard, nutmeg, paprika, sage, rosemary, savory, thyme, curry powder, oregano, apples

For Fruits and Desserts

Apples	Allspice, cardamon, ginger, cinnamon, cloves, nutmeg
Bananas	Allspice, ginger, cinnamon, nutmeg
Oranges	Allspice, cinnamon, anise, nutmeg, cloves, ginger, mace, rosemary
Pears	Allspice, cinnamon, nutmeg, anise, mint
Fruit compotes	Basil, rosemary, saffron, thyme
Puddings	Arrowroot, cinnamon, cloves, lemon peel, vanilla bean, ginger, mace, nutmeg, orange peel