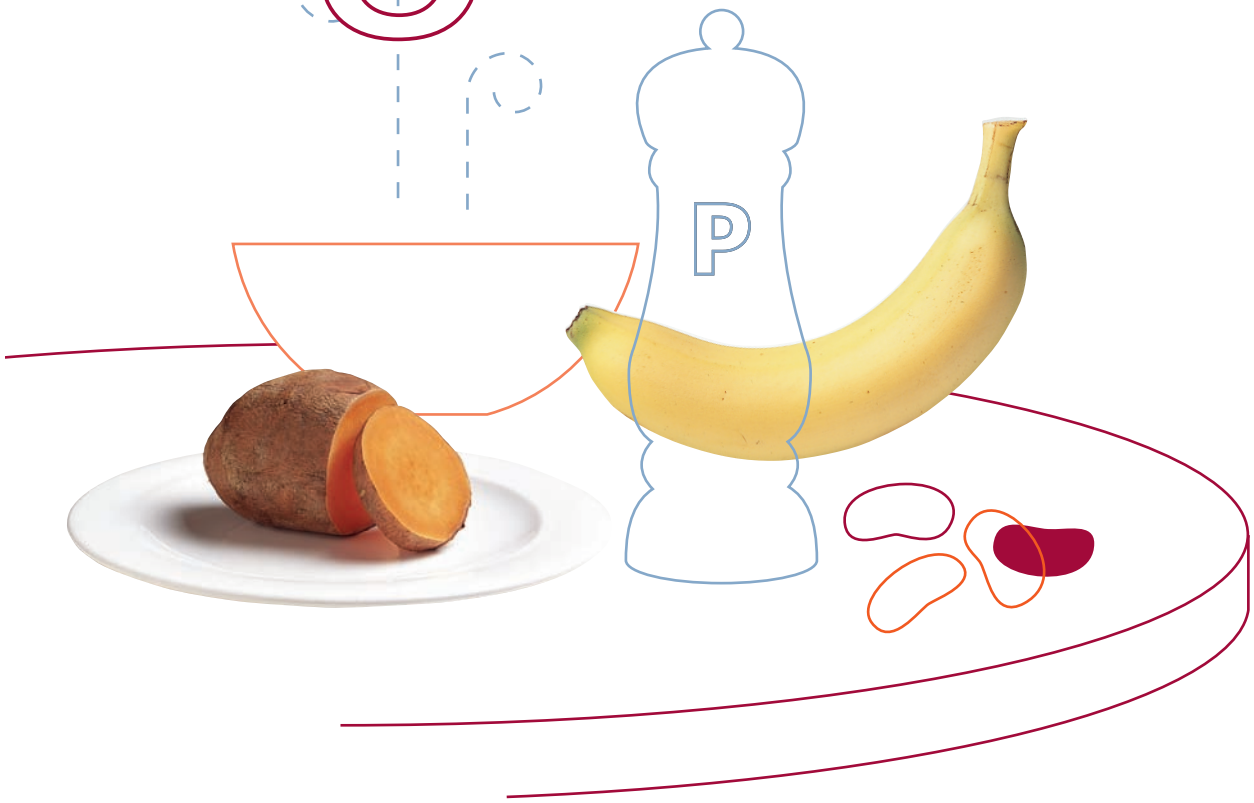
chapter 8



Sodium and Potassium

OVERVIEW

On average, the higher an individual's salt (sodium chloride) intake, the higher an individual's blood pressure. Nearly all Americans consume substantially more salt than they need. Decreasing salt intake is advisable to reduce the risk of elevated blood pressure. Keeping blood pressure in the normal range reduces an individual's risk of coronary heart disease, stroke, congestive heart failure, and kidney disease. Many American adults will develop hypertension (high blood pressure) during their lifetime. Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure. These changes include reducing salt intake, increasing potassium intake, losing excess body weight, increasing physical activity, and eating an overall healthful diet.

DISCUSSION

Salt is sodium chloride. Food labels list sodium rather than salt content. When reading a Nutrition Facts Panel on a food product, look for the sodium content. Foods that are low in sodium (less than 140 mg or 5 percent of the Daily Value [DV]) are low in salt.

Common sources of sodium found in the food supply are provided in figure 4. On average, the natural salt content of food accounts for only about 10 percent of total intake,

while discretionary salt use (i.e., salt added at the table or while cooking) provides another 5 to 10 percent of total intake. Approximately 75 percent is derived from salt added by manufacturers. In addition, foods served by food establishments may be high in sodium. It is important to read the food label and determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods. For example, the sodium content in regular tomato soup may be 700 mg per cup in one brand and 1,100 mg per cup in another brand. Reading labels, comparing sodium contents of foods, and purchasing the lower sodium brand may be one strategy to lower total sodium intake (see table 15 for examples of these foods).

An individual's preference for salt is not fixed. After consuming foods lower in salt for a period of time, taste for salt tends to decrease. Use of other flavorings may satisfy an individual's taste. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before trying salt substitutes.

Discretionary salt use is fairly stable, even when foods offered are lower in sodium than typical foods consumed. When consumers are offered a lower sodium product, they typically do not add table salt to compensate for the lower sodium content, even when available. Therefore, any program for reducing the salt consumption of a population should concentrate primarily on reducing the salt used during food processing and on changes in food selection (e.g., more fresh, less-processed items, less sodium-dense foods) and preparation.

KEY RECOMMENDATIONS

- Consume less than 2,300 mg (approximately 1 tsp of salt) of sodium per day.
- Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

Key Recommendations for Specific Population Groups

- *Individuals with hypertension, blacks, and middle-aged and older adults*. Aim to consume no more than 1,500 mg of sodium per day, and meet the potassium recommendation (4,700 mg/day) with food.

Lifestyle changes can prevent or delay the onset of high blood pressure and can lower elevated blood pressure.

Reducing salt intake is one of several ways that people may lower their blood pressure. The relationship between salt intake and blood pressure is direct and progressive without an apparent threshold. On average, the higher a person's salt intake, the higher the blood pressure. Reducing blood pressure, ideally to the normal range, reduces the risk of stroke, heart disease, heart failure, and kidney disease.

Another dietary measure to lower blood pressure is to consume a diet rich in potassium. A potassium-rich diet also blunts the effects of salt on blood pressure, may reduce the risk of developing kidney stones, and possibly decrease bone loss with age. The recommended intake of potassium for adolescents and adults is 4,700 mg/day. Recommended intakes for potassium for children 1 to 3 years of age is 3,000 mg/day, 4 to 8 years of age is 3,800 mg/day, and 9 to 13 years of age is 4,500 mg/day. Potassium should come from food sources. Fruits and vegetables, which are rich in potassium with its bicarbonate precursors, favorably affect acid-base metabolism, which may reduce risk of kidney stones and bone loss. Potassium-rich fruits and vegetables include leafy green vegetables, fruit from vines, and root vegetables. Meat, milk, and cereal products also contain potassium, but may not have the same effect on acid-base metabolism. Dietary sources of potassium are listed in table 5 and appendix B-1.

Considerations for Specific Population Groups

Individuals With Hypertension, Blacks, and Middle-Aged and Older Adults. Some individuals tend to be more salt sensitive than others, including people with hypertension, blacks, and middle-aged and older adults. Because blacks commonly have a relatively low intake of potassium and a high prevalence of elevated blood pressure and salt sensitivity, this population subgroup may especially benefit from an increased dietary intake of potassium. Dietary potassium can lower blood pressure and blunt the effects of salt on blood pressure in some individuals. While salt substitutes containing potassium chloride may be useful for some individuals, they can be harmful to people with certain medical conditions. These individuals should consult a healthcare provider before using salt substitutes.

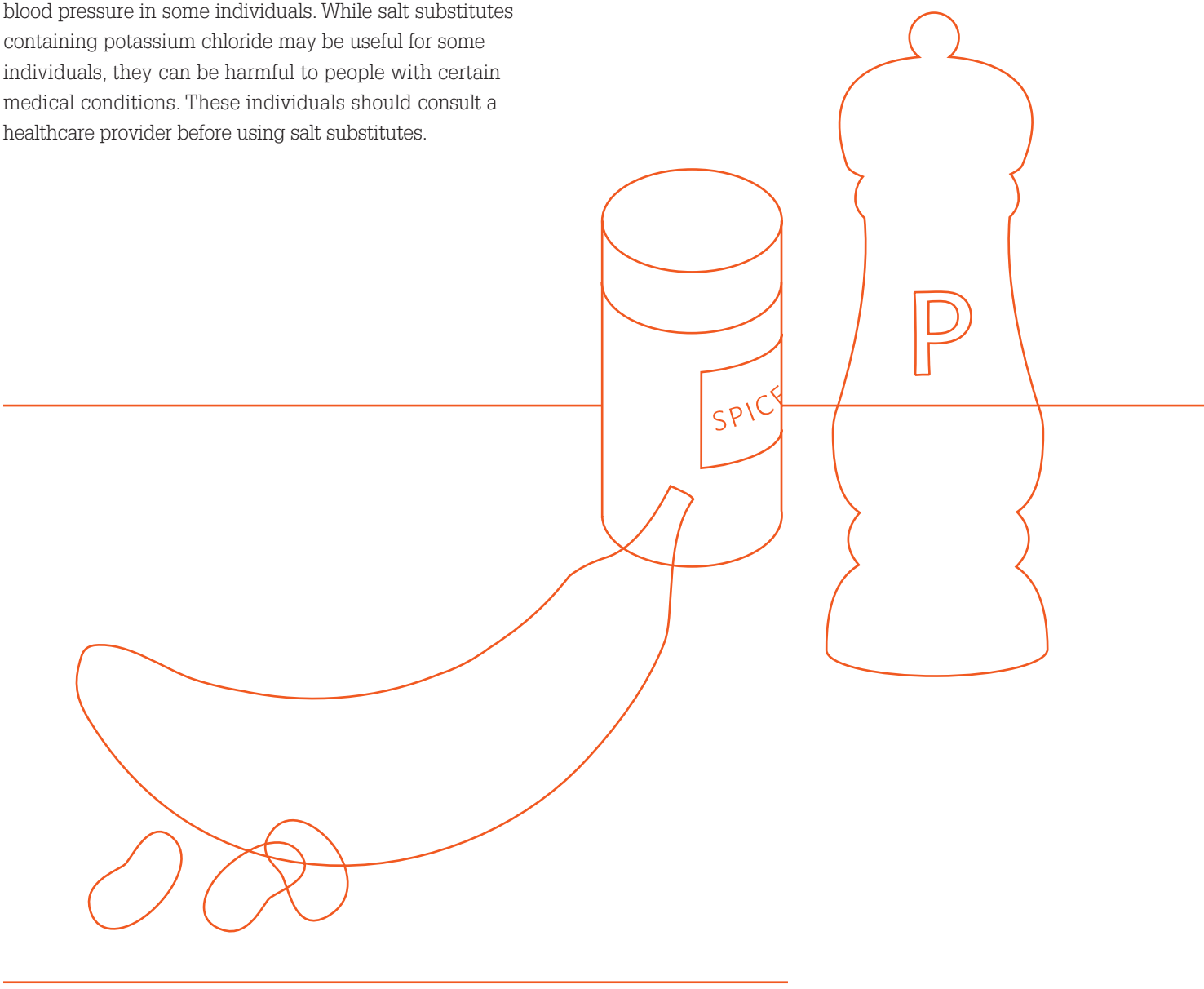
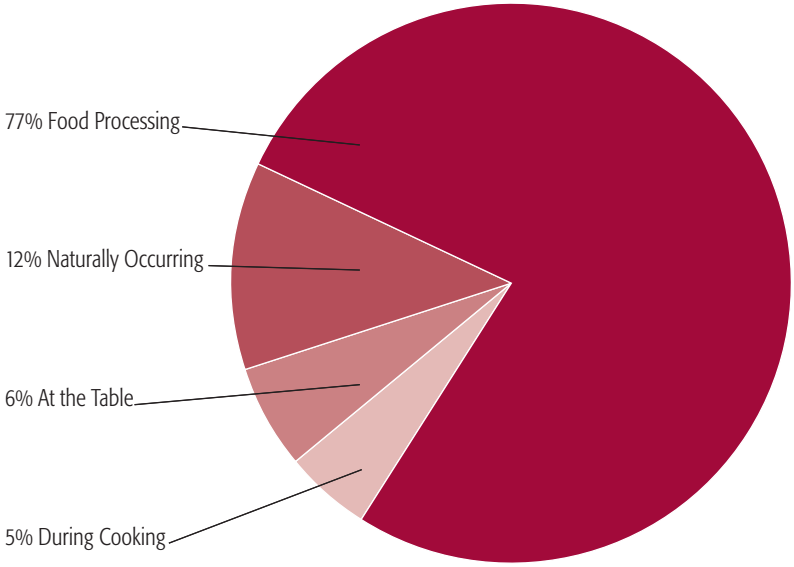


FIGURE 4. Sources of Dietary Sodium

The relative amounts of dietary sodium in the American diet.



Source: Mattes RD, Donnelly D. Relative contributions of dietary sodium sources. *J Am Coll Nutr*. 1991 Aug;10(4):383-93.

TABLE 15. Range of Sodium Content for Selected Foods

The ranges of sodium content for selected foods available in the retail market. This table is provided to exemplify the importance of reading the food label to determine the sodium content of food, which can vary by several hundreds of milligrams in similar foods.

Food Group	Serving Size	Range (mg)
Breads, all types	1 oz	95–210
Frozen pizza, plain, cheese	4 oz	450–1200
Frozen vegetables, all types	½ c	2–160
Salad dressing, regular fat, all types	2 Tbsp	110–505
Salsa	2 Tbsp	150–240
Soup (tomato), reconstituted	8 oz	700–1260
Tomato juice	8 oz (~1 c)	340–1040
Potato chips[a]	1 oz (28.4 g)	120–180
Tortilla chips[a]	1 oz (28.4 g)	105–160
Pretzels[a]	1 oz (28.4 g)	290–560

[a] All snack foods are regular flavor, salted.

Source: Agricultural Research Service Nutrient Database for Standard Reference, Release 17 and recent manufacturers label data from retail market surveys. Serving sizes were standardized to be comparable among brands within a food. Pizza and bread slices vary in size and weight across brands.

Note: None of the examples provided were labeled low-sodium products.