

HealthConnections



Potassium: An Underconsumed Nutrient

Bridging the gap between recommendations and consumption

Potassium's star is rising as consumers learn more about its role in healthful diets. The Scientific Report of the 2015 Dietary Guidelines Advisory Committee declared potassium an underconsumed nutrient of public health concern—less than 3 percent of the population meets the recommendation—and proposed changes to the Nutrition Facts panel will mandate labeling potassium to call attention to its importance. This issue of *Health Connections* describes potassium's health benefits and lists tips for consumers to increase their intake of potassium-rich foods.

Benefits of Potassium

Potassium is a mineral and electrolyte essential for health at the cellular level, and as such it confers benefits throughout the body. Potassium:

- helps muscles—including the heart—contract.
- helps regulate the balance of water and other minerals.
- moves nutrients into and waste out of cells.
- affects nerve signaling.
- slows the breakdown of bone with age.

Potassium's most recognized benefit, however, is to heart health through its effects on lowering blood pressure. As an indication of its public health importance, potassium's role in lowering the risk of high blood pressure is recognized by a US Food and Drug Administration health claim:¹ "Diets containing foods that are a good source of potassium (10 percent of the Daily Value or 350 mg) and that are low in sodium may reduce the risk of high blood pressure and stroke."

Recommended Intake: The Gap

While a Recommended Dietary Allowance has not been established for potassium due to inadequate data on specific amounts needed, the Adequate Intake (AI) for potassium is 4,700 mg for adults based on evidence that this level should lower blood pressure, blunt the adverse effects of sodium chloride on blood pressure, reduce the risk of kidney stones and help reduce bone loss.² The AI for children, 3,000 to 4,500 mg, varies with age. Potassium intake for ages 2 and over regardless of ethnicity ranges between 2,300 and 2,700, or about half of the recommended level. Barriers to meeting daily potassium needs may be related to consumers' low awareness of its importance to heart health and other benefits.

Because underconsumption of potassium is evident across the population, health professionals should assess clients' potassium intake relative to age, gender, ethnicity and life stage. There is a particular concern for middle-aged and older adults at increased risk for cardiovascular diseases.³ The prevalence of hypertension in all adults is about 30 percent but rises to 66 percent in those ages 60-plus. Less than 3 percent of older males and females have intakes above recommended levels; non-Hispanic blacks have the lowest intake for most of the underconsumed nutrients.

Potassium's Protective Role in Heart Health

As its name indicates, the DASH (Dietary Approaches to Stop Hypertension) diet has demonstrated the protective role of food choices in heart health. The DASH eating plan is rich in fat-free or low-fat milk and milk products,

Continued on Page 2



HEALTH CONNECTIONS EDITOR

Mary Jo Feeney, MS, RDN, FADA, FAND, specializes in nutrition communications and marketing. With over 30 years experience in public health nutrition and education, she currently is a leading consultant to the food, agriculture and health care industries. A charter Fellow of the Academy of Nutrition and Dietetics, Mary Jo served on the Academy and its Foundation's Board of Directors, and received the Academy's Medallion Award in 1996.

vegetables, fruits, whole grains, fish, poultry, beans, seeds and nuts. These foods provide potassium, magnesium, calcium, protein and fiber, nutrients associated with lowering blood pressure.⁴ Potassium-rich foods reduce or prevent the blood pressure response to dietary sodium, possibly by stimulating excretion of sodium chloride and/or by increasing vasodilation. Potassium's blood pressure-lowering effect may benefit African Americans and older individuals with chronic diseases, including hypertension, diabetes and kidney disease.

Consuming more potassium-rich foods during childhood may help suppress the adolescent rise in blood pressure. In a recent longitudinal [study of adolescent girls](#) over a 10-year follow up, consumption of 3,500 mg or more of sodium a day had no adverse impact on blood pressure. Higher potassium intakes, however, were inversely associated with blood pressure change throughout adolescence.⁵ This indicates that, at least in adolescent girls, sodium has minimal effect on blood pressure at levels evaluated and potassium has a protective effect.

Dietary Patterns Rich in Potassium Improve Diet Quality

Foods rich in potassium—especially dairy products, vegetables and fruits—include many other nutrients



USDA Healthy US-Style Food Pattern

Food-group servings and portions based on a diet of 2,000 calories/day:

- 3 cups equivalent dairy
- 2 ½ cups vegetables
- 2 cups fruit
- 3 ounces equivalent whole grains
- 5 ½ ounces equivalent protein (meat, poultry, seafood, eggs, nuts, seeds, processed soy)

Note: School meals are also designed to provide these nutrient-rich foods. For children, milk is the primary source of potassium, calcium and vitamin D.⁶

beneficial for general health. The Scientific Report of the 2015 Dietary Guidelines Advisory Committee recommends a healthy dietary pattern high in low-fat and fat-free dairy, vegetables, fruits, whole grains, seafood, legumes and nuts; moderate in alcohol (among adults); low in red and processed meats; and low in sugar-sweetened foods and drinks and refined grains. The majority of the US population does not meet recommended intakes for the Milk + Milk Products, Vegetables, Fruits or Grains food groups, which provide underconsumed nutrients of public health concern. Shifting consumers' choices to the USDA Healthy US-Style Food Pattern (see Sidebar), providing about 70 percent of the recommended intake for potassium, can help lower the risk of chronic diseases affecting almost half of American adults.³ In addition, health professionals can encourage consumers to choose foods high in potassium more frequently while staying within calorie needs.

Food Sources of Potassium

Foods that have a high potassium content include milk, yogurt, certain vegetables and fruits and protein foods such as meat, poultry, some fish, beans and peas.

Food and Portion	Potassium (mg)
1 medium baked potato with skin	941
½ cup cooked beet greens	654
½ cup canned white beans	595
1 cup plain yogurt	352 - 579
1 medium baked sweet potato with skin	542
3 ounces cooked salmon	534
1 cup fresh orange juice	496
½ cup cooked Swiss chard	481
3 ounces cooked halibut	449
½ cup cooked acorn squash	448
1 medium banana	442
1 cup milk	322 - 397
½ cup cooked lentils	365

Source: Adapted from Data Table D1.7. Scientific Report of the 2015 Dietary Guidelines Advisory Committee.

Interview

Victor L. Fulgoni III, PhD, Senior Vice President, Nutrition Impact LLC,
Battle Creek, Michigan

In your analysis of nutrient intake data, what have you found about potassium intakes?

Potassium intakes are well below recommendations for all age and gender groups we have evaluated. I would venture to say the gap in current intakes of potassium as compared to recommended levels is among the largest of all the nutrients with a Dietary Reference Intake. The key issue here is that only a very few foods provide meaningful amounts of potassium—dairy products (milk/yogurt), potatoes, orange juice, tomato products and prunes/prune juice.

Looking at potassium intake using the What We Eat in America data (the dietary component of the National Health and Nutrition Examination Survey [NHANES]), in 2003–2004 USDA reported potassium intakes averaged 2,622 mg/day for those 2-plus years. About a decade later (2011–2012), intakes were virtually unchanged at 2,665 mg/day.

Using data for 2005–2006, USDA reported the average percentage of potassium that was being consumed away from home was 33 percent for those 2-plus years of age; data for 2011–2012 indicated the percentage of potassium consumed away from home was also virtually unchanged for those 2-plus years of age. Thus, neither potassium intake nor eating habits have changed substantially in the past decade.

How do we keep potassium top of mind as a nutrient of public health concern in the eyes of health professionals?

This is one of the most frustrating areas for me. While many say our sodium intakes are too high, I like to say that our potassium intakes are simply too low. Almost everyone agrees that higher potassium intake will reduce effects of sodium intake but for some reason we have only focused on reducing sodium intake (with virtually no success given taste preference for salt/sodium). I think we would be better off trying to increase potassium concomitantly with reducing sodium intake, and maybe selecting more modest sodium reduction targets with modest increases in potassium.

How can health professionals and public health stakeholders help consumers bridge the gap between recommendations and intake?

We need to be more specific about the foods that can provide potassium in the diet. Even the 2015 Dietary Guidelines Advisory Committee continues to state, “Fruits, vegetables and legumes are all important sources of potassium,” but not all fruits/vegetables are important sources of potassium. We have to be more specific about *which* fruits, *which* vegetables, *which* legumes. However since this complicates the message (thus reducing the likelihood of creating a simple message) I have little confidence this will happen. My hope is the producers of the foods that are important sources of potassium will develop messages to convey that importance. However, even that gets complicated as many of the foods the report of the Dietary Guidelines Advisory Committee lists as important sources of potassium would not meet the excellent source nutrient content claim allowed by the US Food and Drug Administration (20 percent of the Daily Value or 700 mg). So, drink more milk, eat more yogurt, have more baked potatoes, have more bananas and eat your beans.



Bridging the Potassium Gap: Tips for Consumers

- Follow a dietary pattern like the DASH diet or the Healthy US-Style Food Pattern to help meet potassium needs.
- Choose foods higher in potassium from each food group at meals and snacks. For example, exchange acorn squash for green beans.
- Include 3 daily servings of dairy—yogurt or milk—to provide about one-third of daily potassium needs.
- Replace soft drinks and other sugar-sweetened beverages (including sports drinks) with fat-free milk for potassium, calcium, vitamin D, magnesium and overall improved nutrient quality.
- Offer children and teens potassium-rich snacks such as milk, yogurt, sweet potato baked fries, guacamole, bananas, raisins and other dried fruit, kiwis and nectarines—all tasty, convenient and nutritious.
- Read Nutrition Facts labels and choose foods that make the nutrient content claim of being a good source of potassium—at least 10 percent of the Daily Value or 350 mg.
- If at risk of high blood pressure, talk to a doctor about following the [DASH diet](#). This diet, along with an active lifestyle, may help avoid or minimize blood pressure-lowering medications as long as possible.
- As well as optimizing potassium intakes, if at risk of high blood pressure see the summer 2009 issue of *Health Connections* “[Managing Hypertension](#)” for more information.



References

1. US Food and Drug Administration Guidance for Food Industry: A Food Labeling Guide. <http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm064919.htm>. Accessed April 26, 2015.
2. Institute of Medicine. Dietary Reference Intakes: Water, Potassium, Sodium, Chloride and Sulfate, 2004.
3. Scientific Report of the 2015 Dietary Guidelines Advisory Committee. <http://www.health.gov/dietaryguidelines/2015-scientific-report>.
4. Your Guide to Lowering Blood Pressure with DASH. http://www.nhlbi.nih.gov/files/docs/public/heart/dash_brief.pdf. Accessed June 9, 2015.
5. Moore LL et al. Longitudinal Effects of Dietary Sodium and Potassium on Blood Pressure in Adolescent Girls. *JAMA Pediatr* 2015;169(6):560-568.
6. Keast DR et al. Food Sources of Energy and Nutrients Among Children in the United States: National Health and Examination Survey 2003-2006. *Nutrients* 2013, 5 (1), 283-301.