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Patient information: Low potassium diet (Beyond the Basics)

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Disclosures

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INTRODUCTION — Potassium is a mineral that is found in many foods. It keeps the heart beating regularly, helps to maintain fluid balance, and allows the nerves and muscles to work properly.

The kidneys maintain the correct level of potassium in the blood. People who take certain medicines or who have chronic kidney disease must limit the amount of potassium in their diet to keep their potassium level close to normal.

This article will discuss the normal level of potassium, how it is measured in the blood, and how to eat a low potassium diet. A discussion of other treatments for chronic kidney disease is available separately. (See "[Patient information: Chronic kidney disease \(Beyond the Basics\)](#)".)

WHY SHOULD I REDUCE POTASSIUM IN MY DIET? — Normally, the level of potassium in your body is balanced by eating foods that contain potassium and getting rid of excess potassium in the urine. However, some people with chronic kidney disease cannot get rid of enough potassium in their urine because the kidneys do not work well.

In these people, the level of potassium in the blood can become higher than normal, causing a condition known as hyperkalemia (hyper=high, kal=potassium, emia=in the blood). Eating a low potassium diet can lower the risk of developing hyperkalemia.

The potassium level is measured by taking a small sample of blood from a vein. A typical normal range for potassium is 3.5 to 5 meq/L. A level greater than 6 meq/L is considered dangerous. A low level can be dangerous as well.

Hyperkalemia does not usually cause noticeable symptoms until the potassium level is very high. At this level, dangerous complications can develop, including an irregular heart rhythm or severe muscle weakness or paralysis.

HOW MUCH POTASSIUM DO I NEED? — In general, experts recommend eating a diet that contains at least 4700 mg of potassium per day [1]. However, most people with chronic kidney disease should eat less than 1500 to 2700 mg of potassium per day.

A registered dietitian or nutritionist can help to create a low potassium meal plan. An example of one such plan includes:

- Fruit — One to three servings of low-potassium fruit per day
- Vegetables — Two to three servings of low-potassium vegetables per day
- Dairy and calcium rich foods — One to two servings of low-potassium choices per day
- Meat and meat alternatives — Three to seven servings of low-potassium choices per day (approximately 15 percent of calories)
- Grains — Four to seven servings of low-potassium grains per day

A sample diet plan is provided in this table ([table 1](#)).

HOW DO I CUT DOWN ON POTASSIUM?

- Almost all foods contain some potassium, so the key is to choose foods with a low potassium level, when possible.
- Notice the serving size when calculating the amount of potassium in a food; a large serving of a low potassium food may have more potassium than a small serving of a food with a high level of potassium.
- Drain canned vegetables, fruits, and meats before serving.

Foods with high levels of potassium — The foods in table 2 have greater than 250 mg of potassium per serving and should be avoided or eaten in very small portions ([table 2](#)).

A process of "leaching" can reduce the amount of potassium in some vegetables. (See '[Reducing potassium levels in vegetables](#)' below.)

Foods with low levels of potassium — The foods in this table have a low level of potassium (less than 250 mg potassium per serving on average) ([table 3](#)). You can eat low potassium foods regularly, but watch your portion size since potassium can quickly add up if you eat a large portion.

Reducing potassium levels in vegetables — It is possible to remove some of the potassium in certain vegetables with high potassium levels. Leaching is a process of soaking raw or frozen vegetables in water for at least two hours before cooking to "pull" some of the potassium out of the food and into the water. You should not eat these vegetables frequently because there is still a lot of potassium in the food after leaching.

- Wash and then cut the raw vegetable into thin slices. Vegetables with a skin (eg, potatoes, carrots, beets, rutabagas) should be peeled before slicing.
- Rinse the cut vegetables in warm water.
- Soak the vegetables for at least two hours or overnight. Use a large amount of unsalted warm water (approximately 10 parts water to 1 part vegetables). If possible, change the water every four hours. Drain the soaking water.
- Rinse the vegetables again with warm water.

- Cook vegetables as desired, using a large amount of unsalted water (approximately 5 parts water to 1 part vegetables). Drain the cooking water.

WHERE TO GET MORE INFORMATION — Your healthcare provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our web site (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for healthcare professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient information: Dialysis and diet \(The Basics\)](#)

[Patient information: Chronic kidney disease \(The Basics\)](#)

[Patient information: Hemodialysis \(The Basics\)](#)

[Patient information: Preparing for hemodialysis \(The Basics\)](#)

[Patient information: Peritoneal dialysis \(The Basics\)](#)

[Patient information: Hyperkalemia \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient information: Chronic kidney disease \(Beyond the Basics\)](#)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Clinical manifestations of hyperkalemia](#)

[Overview of the management of chronic kidney disease in adults](#)

[Potassium and hypertension](#)

[Treatment and prevention of hyperkalemia](#)

The following organizations also provide reliable health information.

- National Institute of Diabetes and Digestive and Kidney Diseases

(<http://kidney.niddk.nih.gov/kudiseases/pubs/eatright/>)

- National Kidney Foundation

(www.kidney.org/ATOZ/atozItem.cfm?id=103, available in Spanish)

[1]

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REFERENCES

1. Nutrition and Your Health: Dietary Guidelines for Americans. Available online at www.health.gov/dietaryguidelines/dga2005/report/HTML/D7_Fluid.htm.

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GRAPHICS

Sample low potassium diet

Food	Calories	Sodium content, mg	Potassium content, mg
Breakfast			
English muffin, white	129	242	62
Low calorie margarine, 2 teaspoons	58	65	4
Puffed corn cereal (non-sweetened), 1.5 cup	135	247	45
Eggs, 2 medium fresh	126	123	118
Coffee, 1.25 cups	3	6	145
Artificial sweetener (Splenda, any amount)	0	0	0
Non-dairy fat-free coffee creamer, 1 ounce	20	3	0
Snack			
Cheddar cheese (reduced fat), 1 ounce	49	270	19
Apple, 1 medium	72	1	148
Lunch			
White bread, 2 slices	108	234	44
Turkey breast, 3 ounces	119	189	236
Mayonnaise, low fat, 1 tablespoon	25	140	2
Lettuce, 1 leaf	4	7	47
Cheddar cheese (reduced fat), 1 ounce	49	270	19
Egg, hard boiled	78	62	63
Lettuce (iceberg), 1.5 cups	12	8	116
Cucumber, peeled, 1/2 medium	12	2	137
Water chestnuts, canned & drained, 5 pieces	17	5	54
Carrot (raw), 1 medium	25	42	195
Salad dressing (Italian, low fat), 1 tablespoon	27	192	4
Snack			
Clementine, 1	35	1	131
Dinner			
Chicken breast (skin removed, baked with breadcrumb coating and no fat), 4 ounces	221	87	287

Green beans, cooked, no salt added, 1 cup	60	46	184
Margarine, low fat, 1 teaspoon	29	33	2
Rice, white, cooked in unsalted water, 1 cup after cooking	234	3	89
Olive oil, 1 teaspoon	40	0	0
Snack			
Oatmeal cookies (reduced fat), 2 small	56	58	22
TOTALS			
	1743	2336	2173

This sample diet would be adequate for a person who is sedentary and not overweight; a person who was active and/or overweight would need additional calories. This diet contains less than 7 percent of calories from saturated fat, and less than 30 percent of calories from total fat, making it ideal for people with coronary artery disease.

Foods with high levels of potassium

Grains	Whole-grain breads, wheat bran, granola and granola bars
Beverages	Sports drinks (Gatorade, etc.), instant breakfast mix, soy milk
Snack foods/sweets	Peanut butter (2 tablespoons), nuts or seeds (1 ounce), fig cookies, chocolate (1.5 to 2 ounces), molasses (1 tablespoon)
Fruits	Apricots, avocado (¼ whole), bananas (½ whole), coconut, melon (cantaloupe and honeydew), kiwi, mango, nectarines, oranges, orange juice, papaya, pears (fresh), plantains, pomegranate (and juice), dried fruits (apricots (5 halves), dates (5), figs, prunes, raisins), prune juice, yams
Vegetables	Bamboo shoots, baked or refried beans, beets, broccoli (cooked), Brussels sprouts, cabbage (raw), carrots (raw), chard, greens (except kale), kohlrabi, olives, mushrooms (canned), potatoes (white and sweet), parsnips, pickles, pumpkin, rutabaga, sauerkraut, spinach (cooked), squash (acorn, butternut, hubbard), tomato, tomato sauce, tomato juice, and vegetable juice cocktail
Dairy products	Milk and milk products, buttermilk, yogurt
Proteins	(3-ounce serving) Clams, sardines, scallops, lobster, whitefish, salmon (and most other fish), ground beef, sirloin steak (and most other beef products), pinto beans, kidney beans, black beans, navy beans (and most other peas and beans, serving size is ½ cup)
Soups	Salt-free soups and low-sodium bouillon cubes, unsalted broth
Condiments	Imitation bacon bits, lite salt or salt substitutes (avoid completely)

Unless noted, one serving is ½ cup (4 ounces). These foods have greater than 250 mg of potassium per serving and should be avoided or eaten in very small portions if you have been told to eat a low-potassium diet.

Foods with low levels of potassium

Grains	Foods prepared with white flour (eg, pasta, bread), white rice
Beverages	Non-dairy creamer, fruit punch, drink mixes (eg, Kool-Aid), tea (<2 cups or 16 ounces per day), coffee (<1 cup or 8 ounces per day)
Sweets	Angel or yellow cake, pies without chocolate or high-potassium fruit, cookies without nuts or chocolate
Fruits	Apples (1), apple juice, applesauce, apricots (canned), blackberries, blueberries, cherries, cranberries, fruit cocktail (drained), grapes, grape juice, grapefruit (½), mandarin oranges, peaches (½ fresh or ½ cup canned), pears (1 small fresh or ½ cup canned), pineapple and juice, plums (1 whole), raspberries, strawberries, tangerine (1 whole), watermelon (1 cup)
Vegetables	Alfalfa sprouts, asparagus (6 spears), green or wax beans, cabbage (cooked), carrots (cooked), cauliflower, celery (1 stalk), corn (½ fresh ear or ½ cup), cucumber, eggplant, kale, lettuce, mushrooms (fresh), okra, onions, parsley, green peas, green peppers, radish, rhubarb, water chestnuts (canned, drained), watercress, spinach (raw, 1 cup), squash (yellow), zucchini
Proteins	Chicken, turkey (3 ounces), tuna, eggs, baloney, shrimp, sunflower or pumpkin seeds (1 ounce), raw walnuts, almonds, cashews, or peanuts (all 1 ounce), flax seeds (2 tablespoons ground), unsalted peanut butter (1 tablespoon)
Dairy products	Cheddar or swiss cheese (1 ounce), cottage cheese (½ cup)

Unless noted, one serving is ½ cup (4 ounces). These foods have a low level of potassium (less than 250 mg potassium per serving on average). You can eat these low potassium foods, but be sure to watch your portion size since potassium can quickly add up if you eat a large portion.

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