



## Potassium and chronic kidney disease (CKD)

### *Introduction*

Potassium is a mineral which helps your nerves and muscles work well. Normally, healthy kidneys will keep the right amount of potassium in your body. If your kidneys are not working well, the potassium level in your blood can be too high or too low. This can affect your heartbeat. A very high level of potassium can cause your heart to stop beating.

Potassium comes from the foods and beverages we consume. Almost all foods have some potassium, but some have much more than others. Medications, such as water pills and some blood pressure medications, can also affect how much potassium you have in your blood.

### *People with CKD*

Some people in the early stages of CKD (pre-dialysis stages) do not need to limit their potassium intake, while others do need to restrict it. There is no benefit to restricting potassium unless your levels are high. If you need to restrict potassium, your doctor and/or registered dietitian will tell you how much potassium you should have each day to keep your potassium level in the healthy range.

**Important Note:** If you are on hemodialysis, you will need to limit your potassium intake to avoid too much build-up between treatments. With peritoneal dialysis, you may be able to enjoy a variety of higher potassium foods, but check with your registered dietitian and/or doctor to be sure.

### *What is a safe level of potassium in my blood?*

Normal blood potassium levels for adults are 3.5 to 5.0 mmol/L. The goal is less than 5.0 if you are on peritoneal dialysis, and less than 5.5 if you are on hemodialysis.

The amount of potassium your body can tolerate depends on several factors: your body size, the medications you are taking, how well your kidneys are functioning, and, if you are on dialysis, how well your dialysis treatments are working.

### *How can I keep my potassium level from getting too high?*

- You may need to limit foods that are high in potassium (see charts that follow). Your registered dietitian will help you make an eating plan that gives you the right amount of potassium.
- Select foods that are lower in potassium – see the food lists below for foods to choose and to avoid.
- If you want to include some high potassium tuberous vegetables (also called *root vegetables*) like potatoes, be sure to *double boil* them first. Double boiling helps to remove some of the potassium from the vegetable. The instructions below describe how to double boil selected

high potassium vegetables. Check with your registered dietitian how much and what kinds of double boiled high potassium vegetables you can safely eat.

- Do not drink or use the liquid from canned fruits and vegetables, or the juices from cooked meat.
- Remember that almost all foods have some potassium. Choose the portion sizes and number of servings recommended by your registered dietitian.
- If you are on dialysis, be sure to get all your dialysis treatments.

### **Potassium content of various foods**

Potassium is found in many foods, especially vegetables and fruit, so it is easy to eat more than your body needs. Other foods which contribute potassium to your diet include protein rich foods, dairy products, breads and cereals.

**Higher and lower potassium foods:** Different foods have very different potassium contents. You'll need to know which foods are higher in potassium and which are lower, and then choose accordingly.

**Serving size:** Serving size is important. Depending on how much potassium is in different fruits and vegetables, an appropriate serving size may vary from ¼ cup to a cup.

**Examples:** Raspberries are so low in potassium that a serving size is 1 cup. Cooked celery is higher in potassium so a serving size is ¼ cup.

**Cooking method:** Cooking methods can affect the amount of potassium in some foods. Heating does not destroy potassium, but cooking tuberous vegetables in large amounts of water allows some of the potassium to move out of the food and into the water.

### **How to double boil vegetables**

Boiling vegetables twice is now considered the best way to remove the most potassium from tuberous vegetables such as potatoes and sweet potatoes. This process does not turn potatoes into a low potassium food. It does allow you to include these foods safely to your diet, in moderation.

1. Wash and peel the vegetable.
2. Dice or thinly slice the vegetable.
3. Place the diced or sliced vegetable in room temperature water. Use two times the amount of water to the amount of vegetable.
4. Bring the water to a boil.
5. Drain off the water and add fresh, room temperature water. Use two times the amount of water to the amount of vegetable.
6. Bring the water to a boil again and cook until the vegetable is soft and tender.

### **What foods can I eat and what foods should I avoid?**

The charts on the following pages provide guidelines to help you choose the right foods and avoid those that are high in potassium.

**Important Notes:** Please be aware that various resources and renal programs use different milligram cut-off levels to categorize what foods are lower or higher sources of potassium. Therefore, you may find some variation in potassium diet resources and food lists. If you are in doubt about a particular food, please ask your registered dietitian. The food lists below show examples of foods to choose and avoid. They are only a guide and are not all inclusive.

*All foods are listed in alphabetical order.*

Potassium guidelines for choosing foods			
Choose		Avoid	
<b>Fruits</b> <i>(a serving is ½ cup unless otherwise noted)</i>			
Apple (1)	Lemon (1)	Apricots	Kiwi
Apple rings (5)	Lime (2)	Banana	Nectarine
Applesauce	Loganberries	Breadfruit	Orange
Blackberries	Lychees (10)	Cantaloupe	Papaya
Blueberries	Mandarin orange	Coconut	Passion fruit
Boysenberries	Mango (1/2 max.)	Dates	Pomegranate
Canned fruit, all types	Peach (1)	Dried fruit, all types	Pomelo (pummelo)
Casaba melon	Pear (1)	Durian	Prickly pear
Cherries (max. 10)	Persimmon (2)	Elderberries	Prunes
Clementine (1)	Pineapple	Figs	Sapote
Crab-apple	Plum (1)	Guava	Soursop
Cranberries	Raspberries	Honeydew melon	<b>Starfruit**</b>
Currants	Rhubarb	Jackfruit, fresh	Tamarind
Fruit cocktail	Sapodilla (1/2 max.)		
Gooseberries	Strawberries		
<b>Grapefruit* (1/2 max.)</b>	Tangelo (1)		
Grapes (20)	Tangerine (1)		
Kumquats (5)	Watermelon		
<b>*Potential Drug Interaction - Speak to your pharmacist or renal dietitian</b>		<b>**Do NOT consume. Speak to your renal dietitian. Starfruit may also be called carambala, bilimbi, belimbing, Chinese starfruit or star apple</b>	

## Potassium guidelines for choosing foods

**Choose**

**Avoid**

### Vegetables

*(a serving is ½ cup unless otherwise noted)*

Alfalfa sprouts	Green beans/peas	Acorn squash	Green banana
Asparagus (6)	Kale	Artichoke	Kohlrabi
Bamboo shoots, canned	Leeks	Avocado	Lentils
Bean sprouts	Lettuce, all types	Baked beans	Lotus root
Beet greens, raw	Mushrooms, white	Bamboo shoots, fresh	Parsnips
Beets, canned	Mustard greens	Beans (adzuki, black, kidney, lima, mung, navy, pinto and white)	Plantain
Burdock root	Okra	Beet greens, cooked	Portabella mushroom
Broccoli	Onion, all types	Beets, fresh/boiled	Potato***
Cabbage	Peppers	Bok choy	Potato chips
Carrots, baby (8)	Radish	Breadfruit	Pumpkin
Cauliflower	Sauerkraut	Broad beans	Rapini, cooked
Celery	Shitake mushrooms	Brussel sprouts	Rutabaga
Chayote	Snow peas (10)	Butternut squash	Soybeans
Collard/collard greens	Spaghetti squash	Cassava	Spinach, cooked
Corn	Spinach, raw	Celeriac	Split peas
Cress, raw	Swiss chard, raw	Chick peas	Succotash
Cucumber	Tomato, ½ medium fresh	Chicory greens	Sui choy
Eggplant	Turnip/turnip greens	Cress, cooked	Sweet potatoes***
Endive (1)	Watercress (raw)	Dandelion greens	Swiss chard, cooked
Escarole	Wax (yellow) beans	Dock/sorrel	Taro
Fennel	Zucchini	Dried mushrooms	Tempeh
		Fiddleheads	Water chestnuts
		French fries	Yam***
		<b>***Double boil your potatoes to lower potassium</b>	

Potassium guidelines for choosing foods	
Choose	Avoid
<b>Meat and protein</b>	
Beef, chicken, pork, turkey, fish	Nuts and seeds, mussels, squid
<b>Milk products</b>	
4-8 oz per day of fresh milk, yogurt or homemade pudding	Chocolate milk, packaged or canned puddings
<b>Grains</b>	
<b>Bread:</b> bread, bagels and rolls made with white flour; light rye	<b>Bread:</b> whole grain or 100% whole wheat breads, bagels; dark rye
<b>Cereal:</b> non-bran cereal, shredded wheat, rice cereals, corn flakes, Cream of Wheat or Cream of Rice	<b>Cereal:</b> bran or whole grain cereal, granola
<b>Crackers:</b> cream crackers, graham crackers, matzo cracker, white melba toast, white rice cake, soda crackers, taco/tortilla shell, tortilla chips (10), water crackers	<b>Crackers:</b> any crackers made from whole wheat/grains or dark rye
<b>Rice/pasta:</b> white rice, white pasta	<b>Rice/pasta:</b> brown rice, whole wheat pasta
<b>Baked goods:</b> arrowroot, angel food cake, blueberry muffins, oatmeal cookies, pound cake, shortbread, social teas (4), sponge cake, sugar cookies, vanilla wafers, white cake, yellow cake	<b>Baked goods:</b> Danish, doughnuts, date square, fruitcake, gingerbread, gingersnap, granola bar, peanut butter cookie, or any baked good made from whole wheat/ grains, carrot or chocolate
<b>Other:</b> couscous (1/3 cup), white flour	<b>Other:</b> barley, buckwheat, bulgur, nuts/seeds, pancake/waffle mix, wheat germ, whole wheat flour
<b>Additional items</b>	
Herbs and spices/herb mix	Salt substitutes
Butter, margarine, oil, mayonnaise	Salt-free cheese
Sugar, sugar substitute, honey, jam, jelly, corn or pancake syrup	Brown sugar, molasses, maple sugar or maple syrup
Regular/decaf coffee and tea, lemonade, Kool-Aid, fruit punch, drink crystals, soft drinks (non-colas)	Specialty coffee (cappuccino, espresso, Turkish), colas, cocoa
	Chocolate, any type

For further information, or if you wish to help us in our efforts, please contact The Kidney Foundation of Canada office in your area. You can also visit our Web site at [www.kidney.ca](http://www.kidney.ca).

*This fact sheet is a joint initiative between The Kidney Foundation of Canada and the Canadian Association of Nephrology Dietitians. With acknowledgement to June Martin, RD, Clinical Dietitian, Grand River Hospital, Kitchener-Waterloo, Ontario for her assistance in compiling this information.*



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