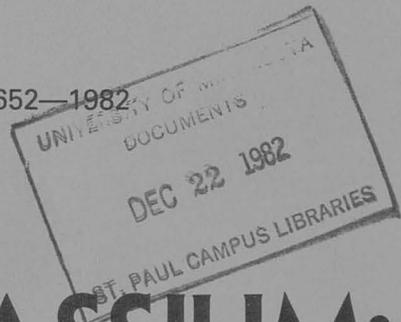


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Extension Folder 652—1982



POTASSIUM: Its Functions and Sources

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What is Potassium?

Potassium is a mineral that is necessary for normal growth and maintenance of the body. Potassium and sodium work together with other nutrients to maintain the balance of fluids inside and outside the cells of the body.

Ninety-eight percent of the potassium in the body is found in the fluid inside the cells (intracellular fluid). Sodium is primarily found in the fluids outside of the cells (intercellular fluid).

Potassium is measured in milligrams (mg) or milli-equivalents (mEq). One milliequivalent is equal to 39 milligrams. The chemical symbol for potassium is K. The words hyperkalemia and hypokalemia refer to high and low levels of potassium in the blood respectively. The potassium levels in the blood for healthy people are 4.5 to 5.6 mEq/liter, or 16-22 mg/100 milliliters. The kidneys regulate the amount of potassium retained by the body.

What are the functions of potassium?

Besides regulating the movement of fluids through the cell wall, potassium is essential for acid-base balance, muscle relaxation, blood pressure maintenance, and the body's use of carbohydrates. Potassium is a part of several enzyme reactions related to the formation of protein and glycogen. It helps get glucose into the cells.

How much potassium is needed each day?

The following amounts of potassium are estimated to be safe and adequate daily dietary intakes of potassium for healthy people.

	Years	Daily Potassium Intake	
		Milligrams	Milliequivalents
Infants	0-0.5	350-925	9-24
	0.5-1	425-1275	11-33
Children	1-3	550-1650	14-42
	4-6	775-2325	20-60
	7-10	1000-3000	26-77
	11+	1525-4575	39-117
Adults		1875-5625	47-144

Adapted from Table 10, Rec Dietary Allowances

The average intake of potassium for adults ranges from 1,950 to 5,900 milligrams (50-150 mEq) each day. The amount needed varies with water intake and efficiency of the kidneys.

A deficiency of potassium can occur with diarrhea, diabetic acidosis, and when using some diuretics or laxatives. These conditions often occur in combination with a poor appetite or a severely restricted diet. The lack of appetite or food contributes to the potassium deficiency.

Too much potassium can be toxic (hyperkalemia). Consuming more than 18,000 milligrams of potassium per day will cause the heart to stop. The body may retain potassium following heart and/or kidney failure, and it may become necessary to restrict potassium intake.

What is the relationship between potassium and medication?

People with high blood pressure or hypertension often require a diuretic prescription. A diuretic drug increases the amount of urine. The most commonly used diuretics (containing thiazide) cause the kidneys to lose potassium as well as sodium, and this potassium needs to be replaced each day. There are potassium-sparing diuretics that may be used in combination with the thiazide diuretics.

In addition to diuretics, some medications for heart disease require that a person's diet provide generous amounts of potassium. An example of such a medication is Digoxin, a digitalis glycoside.

The average person eats between 2,000 and 6,000 mg (50-150 mEq) of potassium daily. The amount and the type of food you eat determines whether or not extra sources of potassium need to be eaten every day. Check with your doctor to determine if you need to eat more foods that contain a lot of potassium.

Potassium supplements are sometimes prescribed by a doctor. They taste bitter and can irritate the stomach. Frequently people mix them with fruit or vegetable juices.

Is potassium needed by people on a weight-reduction diet?

When dieters severely restrict their calorie or food intake (less than 800 to 1000 calories),

they may not be eating enough food to maintain their potassium intake. People who have died after being on a very low calorie diet often had irregular heartbeats or cardiac arrhythmia, a symptom associated with potassium depletion. Dieters should not reduce their calorie or food intake to such a severe restriction.

If you are watching your weight or calorie intake and needing to choose foods that are good sources of potassium, consider fresh fruit and vegetables and their juices. Talk to your doctor or dietitian for ideas on how to manage your calories and eat enough potassium.

Do athletes need more potassium?

Potassium losses are increased during heavy physical exercise in hot, humid climates. It may be especially important to increase potassium intake when adjusting to hot, humid weather.

Instead of using potassium supplements it is recommended that athletes eat five to eight extra servings of good potassium sources (over 300 mg/serving) each day. Fruits such as oranges and bananas are a good idea. "Thirst quenchers" may also be used as a source of potassium. Athletes who sweat profusely may need 4 to 6 grams of potassium per day (*JADA*, July, 1978, Helen Lane and James Gerda).

Other athletes, such as wrestlers, may be tempted to use diuretics or laxatives to lose water and reduce their weight. Diuretics and laxatives remove significant amounts of potassium from the body. The resulting dehydration and potassium losses cause muscle weakness and total collapse (Nathan J. Smith, *Food for Sport*, Palo Alto, California: Ball Publishing Company, 1976, p.141).

Is a salt substitute a good source of potassium?

Salt substitutes or alternatives consist of potassium chloride. They are used by some people who follow salt-restricted diets. One teaspoonful contains 2,730 to 2,790 milligrams of potassium and less than one milligram of sodium. Many people find that the taste is unpleasant and prefer to use other seasonings.

Lite Salt is a mixture of sodium chloride and potassium chloride. One teaspoon contains 1,466 milligrams of potassium and 1,100 milligrams of sodium. Such products should not be used by people on sodium- or potassium-restricted diets unless approved by a physician.

If you cannot use salt in your diet, remember to try some lemon juice or a sprinkling of wine vinegar to season your vegetables, salads, and meat. They will enhance flavors and add a little potassium to your meals. Herbs and spices offer interesting flavors. Extension Folder 562, *Salt and High Blood Pressure* offers more suggestions on seasoning foods without using salt.

Are bananas a good source of potassium?

Yes, they are, but so are a wide variety of other foods. Bananas are acceptable to most people. They are available year round, relatively economical, and can be eaten plain or with many other foods. Consequently, many people choose bananas when increasing their potassium intake. Other excellent sources of potassium to consider are fluid milk, melon, oranges, baked potatoes, winter squash, tomatoes, fresh meats and fish, and dried beans.

One thing to keep in mind is how much of a food is being eaten. On the following list of foods the serving size is carefully described. For example, one banana 7 inches long (measured on the outer curvature) will provide about 350 milligrams of potassium. A 7-inch banana is considered a small banana. Many people can eat larger bananas, but a half of a banana isn't enough. You have to eat the *whole* banana, a *large* baked potato, or drink a *whole cup* of fruit juice. Watch serving sizes to be sure you are getting the amount you need.

Usually the more a food is processed the less potassium it contains. Potassium is water soluble, so soaking vegetables or overcooking vegetables will reduce their potassium content. There are some fresh foods (i.e., grapes, green onions, lettuce, green or wax beans) that are not good sources of potassium. Read the list and check or circle foods you like to eat that will contribute to your potassium intake. Refined bread and pastries are low in potassium as are all sweets.

A food is considered high in potassium if one serving contains 300 milligrams of potassium. There are many foods that contain 100-300 milligrams of potassium in a serving. Foods that contain less than 100 milligrams of potassium should be eaten less frequently. Some of those low potassium foods, like eggs and cheese, are nourishing economical foods. Don't eliminate them from your food choices unless your doctor tells you to do so.

Many people must limit their salt intake while increasing their potassium intake. Foods that are high in sodium are marked with an asterisk (*). For more information on the sodium content of food ask for Extension Folder 562, *Salt and High Blood Pressure* at your county extension office.

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POTASSIUM CONTENT
LIST FOLLOWS

	Amounts	Potassium Milligrams
MILK AND DAIRY PRODUCTS		
Milk		
Buttermilk*	1 cup	343
Cocoa	1 cup	363
Cream, half and half	1 Tbsp	19
Dry milk, nonfat instant, Not reconstituted	1 cup	1173
Ice cream	1 cup	241
Milk shake (choc)*	10	355
Sherbet	1 cup	42
Milk, skim	1 cup	355
Milk, whole	1 cup	351
Soft serve	1 cup	341
Yogurt	1 cup	350
Cheese		
American cheese*	1 oz	23
Cheddar cheese*	1 oz	23
Cottage cheese*	1 cup	185
Cream cheese	1 oz	21
Parmesan cheese, grated	1 Tbsp = 5 g	9
Process cheese spread*	1 oz = 2 Tbsp	68
Nuts		
Coconut	1 cup, not packed	205
Peanuts, salted*	1 cup	971
Peanuts, unsalted	1 cup	1009
Peanut butter	2 Tbsp	200
Sunflower seeds, unsalted	1 cup	422
Walnuts	1 cup	575

	Amount	Potassium Milligrams
FRUITS AND FRUIT JUICES		
Apricots, raw or canned dried	3 10 med. half 1 1/3" dia.	300 343
Apricot nectar	1 cup	379
Apple	3" dia.	182
Apple juice (cider)	1/2 cup	125
Applesauce	1/2 cup	95
Avocado	1/2 of 10 oz	680
Banana	small, 7"	350
Blueberries		
Blackberries		
Raspberries	1 cup	150-200
Cantaloupe	half, 5" dia.	682
Cherries, dark, sweet	1 cup	196
Dates	one	50
Figs, canned	three	127
Grapefruit	half, 3 1/2" dia.	132
Grapefruit juice	1/2 cup	200
Grapefruit/orange juice	1/2 cup	225
Grapes	10 med.	50-75
Grape juice	1/2 cup	150
Honeydew melon	1/4 of 6" dia.	940
Lemon juice	1/2 cup	172
Orange	2 5/8" dia.	263
Orange juice	1 cup	476
Peach, fresh	2 3/4" dia.	308
canned with liquid	2 halves	200
Pear, fresh	2 1/2" dia.	
	3 1/2" high	213
canned with liquid	2 halves	80
Pineapple, fresh or canned	1/2 cup	115
Pineapple juice	1/2 cup	200
Plums, fresh	1 med.	63
canned with liquid	3	190
Prunes, dried	2 med.	150
Prune juice	1/2 cup	300
Raisins	1 Tbsp	76
Rhubarb, cooked	1/2 cup	243
Strawberries, whole	1 cup	244
Tangerine	2 1/2" dia.	127
Watermelon	10" dia. 1" thick	426

**Items marked with an asterisk have more than 200 milligrams of sodium per serving. It is assumed that salt is not added.*

	Amount	Potassium Milligrams
VEGETABLES		
Asparagus, canned* or frozen	1/2 cup	200
fresh, cooked	4 med. spears	110
Beets, fresh, cooked	1/2 cup	177
canned*	1/2 cup	142
Broccoli, fresh, cooked	1/2 cup	207
Brussels sprouts	1/2 cup	225
Cabbage, raw	1" pieces, 1/2 cup	100
cooked	1" pieces, 1/2 cup	180
Carrots, raw or cooked	1/2 cup	180
Cauliflower	1/2 cup	129
Celery, raw	1/2 cup	204
Corn, fresh on the cob	5"	272
canned*	1/2 cup	102
frozen	1/2 cup	152
Green beans, fresh, cooked	1/2 cup	95
canned* or frozen	1/2 cup	110
Green pepper, raw, diced	1/2 cup	450
Lettuce	1/6 head, 3 oz	140
Lima beans, baby, frozen*	1/2 cup	350
Mushrooms, fresh, sliced	1/2 cup	131
Onions, cooked	1/2 cup	115
raw, sliced	1/4 cup	45
young green	3 small	35
Parsnips, diced	1/2 cup	290
Peas, fresh, cooked	1/2 cup	157
frozen	1/2 cup	108
canned*	1/2 cup	81
Potatoes		
baked in skin	6-7 oz, raw wt.	782
boiled in skin	2 1/2" dia.	556
pared and boiled	2 1/2" dia.	385
french fried*	10 strips	300
mashed with milk	1/2 cup	250
hash browns, frozen*	1/2 cup	220
potato salad*	1/2 cup	370
Pumpkin, canned	1/2 cup	294
Radishes	5 med.	70
Rutabaga, fresh, cooked, mashed	1/2 cup	200

	Amount	Potassium Milligrams
Sauerkraut*	1/2 cup	165
Soybean sprouts	1/2 cup	480
Spinach, raw	1/2 cup	130
fresh, cooked	1/2 cup	300
frozen	1/2 cup	350
canned*	1/2 cup	250
Sweet potato, boiled	5" long, 2" dia.	367
Tomato, raw	3" dia. 2 1/8" high	444
Tomato juice, canned*	1/2 cup	243
Tomatoes, canned	1/2 cup	262
Tomato paste, canned	1/2 cup	1,100
Turnip, mashed	1/2 cup	216
Vegetable juice cocktail*	1/2 cup	265
Winter squash	1/2 cup	624
Yams	1/4 lb	500
Zucchini	1/2 cup	127

GRAIN PRODUCTS

Breads

Biscuit	2"	32
Bran muffins	1 muffin	172
Bread, white	1 slice	29
Bread, whole wheat	1 slice	72
Coffee cake (baking powder)*	1/6 of cake or 2 1/2 oz	78
Corn bread	2 1/2" x 2 1/2" x 1 3/8"	122
Danish roll*	4" dia, 1" high	73
Doughnuts, cake	3 5/8" dia., 2 oz	52
yeast	3 3/4" dia., 1 1/2 oz	34
Flour, white	1 cup	130
whole wheat	1 cup	444
soy, defatted	1 cup	1820
rye, light	1 cup	137
rye, dark	1 cup	1101
Hamburger bun	3 1/2" x 1 1/2"	38
Pancake, 2 1/2 oz	6" dia., 1/2" thick	100
Waffle*	7" dia., 5/8" thick	146

**Items marked with an asterisk have more than 200 milligrams of sodium per serving. It is assumed that salt is not added.*

	Amount	Potassium Milligrams		Amount	Potassium Milligrams
Cereal			DESSERTS		
Bran flakes*	1 cup	137	Angel food cake	2½" arc, ⅓ ₁₂ of cake	53
Corn flakes*	1 cup	30	Chocolate cake,*	4" arc, ⅓ pie	152
Farina	1 cup	25	w/icing, commercial	1¾" thick	
Oatmeal, cooked	1 cup	146	Chocolate pudding,		
dry form	1 cup	282	instant mix*	1 cup	335
Puffed Wheat or Rice	1 cup	51	homemade	1 cup	445
Shredded Wheat	1 biscuit	70	Cream pie*	4¾" arc, ⅓ pie	309
Wheat flakes*	1 cup	81	Danish roll pastry*	1 roll	73
Wheat germ	1 Tbsp.	57	Fruit pie*	4¾" arc, ⅓ pie	126
Crackers			Gelatin dessert, made		
Graham crackers	2 squares	55	with water	1 cup	—
Pretzels, twisted	1 lg 2¾" × 2⅝"	21	Ice cream	1 cup	241
Pretzels, sticks	10 sticks, 2¼" long	4	Sandwich cookies	1 cookie	4
Rye Crisp	1 wafer, 3½" × 1⅞"	39	Sherbet	1 cup	42
Saltines, salted*	10 crackers	34	SUGAR AND SWEETS		
unsalted	10 crackers	9	Caramels	1 oz	54
Pasta, cooked			Chocolate bar	1 oz	109
Egg noodles	1 cup	70	Chocolate syrup or		
Macaroni	1 cup	103	topping	2 Tbsp	106
Rice, white	1 cup	57	Corn syrup, light		
brown	1 cup	151	and dark	1 Tbsp	1
Spaghetti	1 cup	103	Fruit preserves	1 Tbsp	18
BEVERAGES			Gum drops	1 oz	1
Alcoholic beverages			Honey	1 Tbsp	11
Beer	12 oz	90	Jelly	1 Tbsp	14
Gin, rum, vodka, whiskey	1 oz	1	Maple syrup	1 Tbsp	35
Wine	3½ oz	94	Mints, after dinner	1½" dia. × ½" (⅓ oz)	10
Carbonated beverages			Sugar, white granulated	1 cup	6
Coca cola	8 oz	117	brown, without		
Gingerale	8 oz	117	packing	1 cup	499
Orange crush	8 oz	234	Molasses, light	1 Tbsp	183
Pepsi cola	8 oz	0	Blackstrap	1 Tbsp	585
Root beer	8 oz	0	FATS AND OILS		
Seven Up	8 oz	0	Butter	1 Tbsp	3
Cocoa	1 cup	363	French dressing*	1 Tbsp	13
Coffee, tea, decaffeinated			Italian dressing*	1 Tbsp	2
coffee	6-8 oz	65	Margarine	1 Tbsp	3
Fruit juices	See listing under fruits.		Mayonnaise	1 Tbsp	5
Dry beverage mixes	8 oz	0	Salad oil	1 Tbsp	0
Lemonade	1 cup	40	<i>*Items marked with an asterisk have more than 200 milligrams of sodium per serving. It is assumed that salt is not added.</i>		

	Amount	Potassium Milligrams
COMBINATION DISHES		
Beef stew, homemade*	1 cup	613
Chili con carne, canned*	1 cup	594
Chow mein,* without noodles	1 cup	473
Macaroni and cheese*	1 cup	240
Pizza, cheese, commercial*	15 oz, 10"	485

MEATS, LEGUMES, AND EGGS

Legumes

Baked beans, canned, with pork*	1 cup	683
Dried beans, Great Northern, cooked	1 cup	749
Kidney beans, canned* with liquid	1 cup	673
Lentils, cooked	½ cup	498
Peas, split, cooked	1 cup	592
Peanut butter	2 Tbsp	200
Soy beans	½ cup	500
Tofu	1 lb	191

Beef

Corned beef*	3 oz	55
Liver	3 oz	323
Hamburger	3 oz	261
Round steak	3 oz	272
Roast beef	3 oz	237

Eggs

Egg	1 lg egg	65
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Fish

Codfish fillet	2 oz	265
Haddock, raw	3½ oz	304
Halibut	3 oz	450
Lobster, cooked*	1 cup	261
Perch, ocean	3 oz	250
Salmon, fresh or canned*	3 oz	350
Shrimp, french fried	1 oz	65
Tunafish in oil*	½ cup drained	250
Tunafish in water*	6½ oz, solids and liquids	513
Whitefish, raw, lake	4 oz edible portion	339

Pork

Bacon*	3 strips	52
Ham, cured*	3 oz	199
Pork chop	3 oz	233
Sausage (pork)*	1 link or 1 oz	40

Poultry

Chicken, baked	3 oz	400
Turkey	3 oz	312

Sausages

Frankfurters*	one, 2 oz	125
Luncheon Meats*	1 oz	65
Sausage (pork)*	1 link or 1 oz	40

MISCELLANEOUS

Baking powder*	1 tsp	5
Baking soda*	1 tsp	0
Chili sauce, canned	—	—
Catsup	1 Tbsp	54
Cocoa powder	1 Tbsp	50
Lemon juice	1 Tbsp	21
Mustard	1 tsp	7
Olives, green*	10 olives, lg	21
ripe*	10 olives, lg	16
Pickles, dill*	1 med. 3¾" long, 1¼" dia.	130
Popcorn	1 cup	—
Soy sauce*	1 Tbsp	66
Vinegar	1 Tbsp	2
Yeast, Brewer's	1 Tbsp	152

SOUPS (Commercial)

Prepared with water

Bouillon*	1 cup	130
Chicken noodle soup*	1 cup	55
Cream of mushroom soup*	1 cup	955
Tomato soup*	1 cup	230
Vegetable soup*	1 cup	172

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