

Oxalate in Food

Information for patients and families

- If you have kidney stones made from calcium oxalate, cutting back on high-oxalate foods may help prevent kidney stones.
- On a low oxalate diet, you should limit your oxalate to 40 to 50 mg each day.
- Oxalate is found in many foods. The following chart will help you avoid foods high in oxalate and help you eat foods low in oxalate.

What are oxalates?

Oxalates are organic substances that are created by the body or found in plant-based foods. When eaten, they normally bind to calcium or are excreted through the urine and stool. If they are not used or excreted, a build-up of these compounds can lead to the formation of calcium oxalate crystals or a kidney stone. **A lower oxalate diet can play a role in reducing calcium oxalate kidney stone formation.**

Category	Food Item	Serving Size	Oxalate Amount	Oxalate Value (mg = milligram)
Fruits	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Apricots	1 fruit	Little or None	0 mg
	Nectarine	1 fruit	Little or None	0 mg
	Peaches	1 fruit	Little or None	0 mg
	Plums	1 fruit	Little or None	0 mg
	Apples	1 fruit	Little or None	1 mg
	Cantaloupe	1/4 melon	Little or None	1 mg
	Grapes	1/2 cup or 16 grapes	Little or None	1 mg
	Honeydew Melon	1 cup	Little or None	1 mg
	Lemons	1 wedge	Little or None	1 mg
	Mango	1 fruit	Little or None	1 mg
	Papaya	1 medium fruit	Little or None	1 mg
	Plantain	1 medium	Little or None	1 mg
	Watermelon	1 slice	Little or None	1 mg
	Apple Sauce	1 cup	Low	2 mg
	Blackberries	1/2 cup	Low	2 mg
	Blueberries	1/2 cup	Low	2 mg
	Pears	1 fruit	Low	2 mg
	Strawberries	1/2 cup	Low	2 mg
	Banana	1 fruit	Low	3 mg
	Cherries	1 cup	Low	3 mg
	Limes	1/2 fruit	Low	3 mg
	Pineapple	1 cup	Low	4 mg
	<i>Eat in moderate amounts</i>			
	Figs	1 medium fig	Moderate	9 mg

	<i>Eat less</i>			
	Tangerine	1 fruit	High	10 mg
	Grapefruit	1/2 fruit	Very High	12 mg
	Kiwi	1 fruit	Very High	16 mg
	Avocados	1 fruit	Very High	19 mg
	Dates	1 date	Very High	24 mg
	Orange	1 fruit	Very High	29 mg
	Raspberries	1 cup	Very High	48 mg
Canned Fruits	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Canned Pears	1/2 cup	Little or None	1 mg
	Canned Peaches	1/2 cup	Little or None	1 mg
	Fruit Cocktail	1/2 cup	Little or None	1 mg
	Cranberry Sauce	1/2 cup	Low	2 mg
	<i>Eat in moderate amounts</i>			
	Canned Cherries	1/2 cup	Moderate	7 mg
	<i>Eat less</i>			
Dried Fruits	Canned Pineapple	1/2 cup	Very High	24 mg
	*Note: dried fruits contain more oxalates per serving size than fresh, canned or frozen fruits			
	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Dried Cranberries	1/2 cup	Little or None	1 mg
	Dried Apples	1 cup or 13 rings	Low	2 mg
	Dried Apricots	1 cup of halves	Low	3 mg
	Raisins	1 oz or 1 small snack box	Low	3 mg
	<i>Eat less</i>			
	Dried Prunes	1/4 cup or 5 prunes	High	11 mg
	Dried Figs	5 pieces/fruits	Very High	24 mg
	Dried Pineapples	1/2 cup	Very High	30 mg
Vegetables	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Alfalfa Sprouts	1/2 cup	Little or None	0 mg
	Chives	1 tsp	Little or None	0 mg
	Endive	1/2 cup	Little or None	0 mg

	Iceberg Lettuce	1 cup	Little or None	0 mg
	Mushrooms	1 mushroom	Little or None	0 mg
	Onions	1 small onion	Little or None	0 mg
	Pickles	1 pickle	Little or None	0 mg
	Radish	10 count	Little or None	0 mg
	Romaine Lettuce	1 cup	Little or None	0 mg
	Water Chestnuts	4 nuts	Little or None	0 mg
	Bok Choy	1 cup, raw	Little or None	1 mg
	Broccoli	1/2 cup chopped	Little or None	1 mg
	Cabbage	1/2 cup	Little or None	1 mg
	Cauliflower	1/2 cup cooked	Little or None	1 mg
	Corn	1/2 cup	Little or None	1 mg
	Cucumber	1/4 cucumber	Little or None	1 mg
	Green Pepper	1 ring	Little or None	1 mg
	Peas	1/2 cup	Little or None	1 mg
	Scallions	1/2 cup	Little or None	1 mg
	Sauerkraut	1/2 cup	Little or None	1 mg
	Yellow Squash	1/2 cup	Little or None	1 mg
	Zucchini	1/2 cup	Little or None	1 mg
	Brussels Sprouts	1/2 cup frozen	Low	2 mg
	Kale	1 cup chopped	Low	2 mg
	Celery, raw	1 stalk	Low	3 mg
	Sea Vegetables	1 cup	Low	3 mg
	Mustard Greens	1 cup chopped	Low	4 mg
	<i>Eat in moderate amounts</i>			
	Artichokes	1 small bud	Moderate	5 mg
	Hot Chili Peppers	1/2 cup	Moderate	5 mg
	Mixed Vegetables, frozen	1/2 cup	Moderate	5 mg
	Asparagus	4 spears	Moderate	6 mg
	Carrots, cooked	1/2 cup sliced	Moderate	7 mg
	Tomato	1 med whole	Moderate	7 mg
	String Beans	1/2 cup	Moderate	9 mg
	<i>Eat less</i>			
	Carrots, raw	1/2 lg carrot	High	10 mg
	Celery, Cooked	1 cup	High	10 mg
	Collards	1 cup	High	10 mg
	Parsnip	1/2 cup	Very High	15 mg
	Tomato Sauce	1/2 cup	Very High	17 mg
	Olives	10 olives	Very High	18 mg
	Turnip	1/2 cup mashed	Very High	30 mg

	Rutabaga	1/2 cup mashed	Very High	31 mg
	Bamboo Shoots	1 cup	Very High	35 mg
	Yams	1/2 cup, cubed	Very High	40 mg
	Okra	1/2 cup	Very High	57 mg
	Beets	1/2 cup	Very High	76 mg
	Rhubarb	1/2 cup	Very High	541 mg
	Spinach, raw	1 cup	Very High	656 mg
	Spinach, cooked	1/2 cup	Very High	755 mg
Potatoes	<i>Eat less</i>			
	Potato Salad	1/3 cup	Very High	17 mg
	Potato Chips	1 oz	Very High	21 mg
	Sweet Potatoes	1 cup	Very High	28 mg
	Mashed Potatoes	1 cup	Very High	29 mg
	French Fries	4 oz or 1/2 cup	Very High	51 mg
	Baked Potato with Skin	1 medium	Very High	97 mg
Legumes	<i>Eat in moderate amounts</i>			
	Blackeye Peas	1/2 cup	Moderate	4 mg
	Yellow Split Peas	1/2 cup	Moderate	5 mg
	Green Split Peas	1/2 cup	Moderate	6 mg
	Lima Beans	1/2 cup	Moderate	8 mg
	Lentils	1/2 cup	Moderate	8 mg
	Mung Beans	1/2 cup	Moderate	8 mg
	Garbanzo Beans or Chickpeas	1/2 cup	Moderate	9 mg
	<i>Eat less</i>			
	Red Kidney Beans	1/2 cup	Very High	19 mg
	Azuki Beans	1/2 cup	Very High	26 mg
	October Beans	1/2 cup	Very High	28 mg
	Pinto Beans	1/2 cup	Very High	29 mg
	Soybeans	1/2 cup	Very High	57 mg
	Navy Beans	1/2 cup	Very High	58 mg
	Black Beans	1/2 cup	Very High	73 mg
	Pink Beans	1/2 cup	Very High	75 mg
	Great Northern Beans	1/2 cup	Very High	77 mg
	Small White Beans	1/2 cup	Very High	77 mg
	Anasazi Beans	1/2 cup	Very High	85 mg

Breads	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Corn Bread	1 piece	Low	4 mg
	Oatmeal Bread	1 piece	Low	4 mg
	Oat Bran Muffin	1 small muffin	Low	4 mg
	Oat Bran Bread	1 slice	Low	4 mg
	<i>Eat in moderate amounts</i>			
	Bran Muffins	1 muffin	Moderate	5 mg
	Cracked Wheat Bread	1 slice	Moderate	5 mg
	White Bread	1 slice	Moderate	5 mg
	Whole Oat Bread	1 slice	Moderate	5 mg
	Biscuits (plain or buttermilk)	1 biscuit	Moderate	6 mg
	Whole Wheat Bread	1 slice	Moderate	6 mg
	Rye Bread	1 slice	Moderate	7 mg
	Tortillas, Corn	1 tortilla	Moderate	7 mg
	Wheat Bran Bread	1 slice	Moderate	7 mg
	English Muffin	1 muffin	Moderate	8 mg
	English Muffin Multi-Grain	1 muffin	Moderate	8 mg
	Tortillas, flour	1 tortilla	Moderate	8 mg
	<i>Eat less</i>			
	Blueberry Muffins	1 muffin	High	9 mg
	Pancakes (mix)	4 cakes	High	10 mg
	English Muffin Whole Wheat	1 muffin	High	12 mg
	French Toast	2 slices	Very High	13 mg
Pastas, Rice and Grains	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Barley Malt Flour	1 cup	Little or None	0 mg
	Corn Bran	1 cup	Little or None	0 mg
	Flaxseed	1 Tbsp	Little or None	0 mg
	Oat Bran, raw	1/3 cup	Little or None	0 mg
	Corn Flour	1 cup	Low	3 mg
	Macaroni	1 cup	Low	4 mg
	White Rice, cooked	1 cup	Low	4 mg

	<i>Eat less</i>			
	Spaghetti	1 cup cooked	High	11 mg
	White Rice Flour	1 cup	High	11 mg
	Couscous	1 cup	Very High	15 mg
	All-Purpose Flour	1 cup	Very High	17 mg
	Lasagna	1 serving	Very High	23 mg
	Brown Rice, cooked	1 cup	Very High	24 mg
	Wheat Flour, Whole Grain	1 cup	Very High	29 mg
	Miso	1 cup	Very High	40 mg
	Millet, cooked	1 cup	Very High	62 mg
	Cornmeal	1 cup	Very High	64 mg
	Brown Rice Flour	1 cup	Very High	65 mg
	Bulgur, cooked	1 cup	Very High	86 mg
	Soy Flour	1 cup	Very High	94 mg
	Corn Grits	1 cup	Very High	97 mg
	Wheat Berries	1 cup cooked	Very High	98 mg
	Buckwheat Groats	1 cup cooked	Very High	133 mg
	Quinoa, uncooked	100g	Very High	184 mg
	Rice Bran	1 cup	Very High	281 mg
Nuts and seeds	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Flaxseed	1 Tbsp	Little or None	0 mg
	<i>Eat less</i>			
	Pecans	1 oz	High	10 mg
	Sunflower Seeds	1 cup	High	12 mg
	Pistachios	1 oz	High	14 mg
	Pumpkin Seeds	1 cup, cooked	Very High	17 mg
	Peanuts	1 oz	Very High	27 mg
	Walnuts	1 cup or 7 nuts	Very High	31 mg
	Mixed Nuts	1 oz	Very High	39 mg
	Cashews	1 oz or 18 nuts	Very High	49 mg
	Almonds	1 oz or 22 nuts	Very High	122 mg
Dairy-free Beverages	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Rice beverage	1 cup	Low	1 mg
	Soymilk	1 cup	Low - Moderate	4-6 mg

	<i>Eat less</i>			
	Almond beverage	1 cup	Very High	15-38 mg
Sweets	<i>Eat less</i> *Note: the darker the chocolate, the higher the oxalate content			
	Milk Chocolate	100 g	Very High	50-67 mg
	Dark chocolate	100 g	Very High	39-254 mg
	Cocoa	100 g	Very High	216-729 mg
Ingredients	<i>Good Choices (1 to 4 mg Oxalate)</i>			
	Black Pepper	1 dash	Little or None	0 mg
	Barley Malt Flour	1 cup	Little or None	0 mg
	Butter	1 pat	Little or None	0 mg
	Corn Syrup (Light)	1 Tbsp	Little or None	0 mg
	Cod Liver Oil	1 tsp	Little or None	0 mg
	Cream Substitute	1 tsp	Little or None	0 mg
	Cream	1 Tbsp	Little or None	0 mg
	Eggs	1 medium egg	Little or None	0 mg
	Eggbeaters	4 oz	Little or None	0 mg
	Garlic Powder	1 tsp	Little or None	0 mg
	Gelatin	1 Tbsp or 1 envelope	Little or None	0 mg
	Honey	1 Tbsp	Little or None	0 mg
	Lard	1 tsp	Little or None	0 mg
	Lemon Juice Raw (concentrate)	1 Tbsp	Little or None	0 mg
	Molasses	1 Tbsp	Little or None	0 mg
	Oat Flour	1 cup	Little or None	0 mg
	Salt	1 tsp	Little or None	0 mg
	Shortening	1 tsp	Little or None	0 mg
	Sugar	1 tsp	Little or None	0 mg
	Sweet Whey Dried	1 Tbsp	Little or None	0 mg
	Artificial Sweetener	1 packet	Little or None	1 mg
	Bouillon Cube	1 cube	Little or None	1 mg
	Brown Sugar	1 cup packed	Little or None	1 mg
	Buttermilk	1 cup	Little or None	1 mg
	Corn Syrup (high Fructose)	1 Tbsp	Little or None	1 mg

	Sweet Whey Fluid	1 cup	Little or None	1 mg
	Corn Flour	1 cup	Low	3 mg
	Cornstarch	1 cup	Low	3 mg
	Lemon Juice (canned or bottled)	1 cup	Low	4 mg
	<i>Eat in moderate amounts</i>			
	Chili Powder	1 Tbsp	Moderate	7 mg
	Brewer's Yeast	1 Tbsp	Moderate	7 mg
	<i>Eat less</i>			
	White Rice Flour	1 cup	High	11 mg
	All-Purpose Flour	1 cup	Very High	17 mg
	Brown Rice Flour	1 cup	Very High	65 mg
	Cocoa Powder	4 tsp	Very High	67 mg
	Cornmeal	1 cup	Very High	64 mg
	Soy Flour	1 cup	Very High	94 mg
	Soy Protein Isolate	1 oz	Very High	27 mg
	Wheat Flour, Whole Grain	1 cup	Very High	29 mg

Other recommendations

- Cooking food often lowers the oxalate content. Boil, steam, bake and sauté plant-based foods.
- Eating dairy products with meals can help to lower oxalate levels in your urine. Have 1 serving of dairy with each meal, such as 1 cup (250 mL) of milk or $\frac{3}{4}$ cup (175 g) of plain yogurt or 1 $\frac{1}{2}$ ounces (50 g) of low salt cheese.
- Limit animal protein foods such as meat, fish, poultry and eggs to 2 servings a day. One serving size is 2.5 ounces or 75 grams; this is the size of one deck of cards. Choose vegetable sources of protein instead of meat such as lentils, beans or legumes.
- Limit added salt to less than 2000 mg per day ($\frac{3}{4}$ teaspoon). This includes salt in cooking, at the table, naturally found in foods, condiments, processed and fast foods.
- Drink 2 to 2.5 Litres (8 to 10 cups) of fluids each day (at least half from water). On hot days and when active, aim to drink more than 2.5 Litres.
- Your body may turn extra vitamin C into oxalate. Avoid high doses of vitamin C supplements (more than 1,000 mg of vitamin C per day).

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