

General Recommendations for Prevention of Kidney Stones

You can prevent kidney stones! To reduce your risk of forming new stones, please follow these guidelines:

Increase Urine Volume. The number one thing you can do to prevent stone formation is to drink more fluids, thereby diluting your urine. Your goal should be to urinate more than two liters per day. All fluids (water, coffee, juice, soda) count towards this goal, but you should avoid grapefruit juice.

Consume Adequate Calcium. Stone formers sometimes think they should restrict calcium intake. There is no research that supports this practice. Your body needs dietary calcium to support the skeleton. We encourage you to consume two servings of dairy (but no more than two) or other calcium rich food per day to maintain bone stores of calcium. Avoid calcium supplements in tablet or capsule form.

Decrease Salt/Sodium Intake. The human body carefully regulates its sodium levels. When excess sodium is excreted in the urine, calcium is also excreted proportionally. In other words, the more sodium you take in and excrete, the more calcium you waste in the urine. Excess calcium in the urine can lead to new stone formation.

Salt In Diet → Salt Out in Urine → Calcium Out in Urine → Calcium Stone Risk

Try to reduce dietary sources of sodium, including fast foods, packaged or canned foods, and salty snacks. Watch out for “silent sources” such as softened water and sports drinks. **Your goal should be to consume less than 2 grams (2000 milligrams) per day of sodium.** Our office can provide more information on sodium. It may be helpful to see a registered dietician to accomplish this; we can provide a referral if necessary.

Decrease Protein Intake. Most Americans exceed necessary protein intake. This can lead to uric acid stone formation. As a general recommendation, limit your daily protein intake to 12 ounces per day of beef, poultry, fish and pork. Twelve ounces is equivalent in size to about three decks of cards. This will be plenty to meet your body's needs.

Tips for Increasing Fluid Intake Information for Kidney Stone Formers

Your urologist has recommended increasing your water intake. Why? If you are a kidney stone former, the **NUMBER ONE** thing you can do to prevent formation of stones is to make your urine more dilute by increasing fluid intake. If your doctor has prescribed medication and/or diet changes to prevent stones, urinating at least 2 liters of urine each day should still be your goal.

We can all benefit from increasing fluids. Our bodies need fluid to digest food, eliminate waste and transport nutrients. If you struggle with your weight, water consumption can give a feeling of fullness, replacing caloric foods and liquids.

Remember that if you are losing moisture on a hot day through perspiration, you must **DRINK MORE** to make up for that loss through your skin. Here are some tips to help you reach the goal of generating 2 liters (about 64 ounces) of urine each day:

1. Good tasting water is easier to consume than tap water; treat yourself to bottled water or a charcoal-filter pitcher.
2. Drink a large glass of water at transitional times during the day: when you get up in the morning, before leaving home, when you arrive at work, after using the restroom, etc.
3. Keep a large, insulated water bottle or mug at your desk.
4. Try sipping from a straw; some people feel drinking through a straw helps them drink more.
5. Drink one glass of water each hour on the hour.
6. Dilute fruit juices with water 50:50.
7. Make a bet with a family member or coworker to see who can drink the most during the day.
8. When you feel a craving for junk food or sweets, drink a glass of water instead.
9. Bring a 2-liter bottle of water to work. If you have not finished by the end of the day, finish it on the drive home.
10. Add frozen bits of lemon, lime or oranges to cool water.
11. Drink two full glasses at each meal – one before and one after eating.
12. Carry a refillable water bottle everywhere – walking, shopping, driving, watching television, doing laundry, etc.
13. Drink from an attractive or special container.
14. To keep track of quantity consumed, pour water from a liter bottle or measuring cup as you drink throughout the day.
15. Fluid intake should be spread out as evenly as possible during the day. If you don't get up once at night to urinate, you're not drinking enough.
16. Choose moist foods, for example fresh fruit instead of dried fruit.

Calcium Content of Common Foods Information for Patients with Kidney Stone Disease

If you form kidney stones, which may be made of calcium, you should avoid dairy products, right? **WRONG!** Your bones are constantly being broken down and rebuilt; calcium is essential for the rebuilding part! When your health care provider tells you to eat 2 servings of dairy per day, what does this really mean?

DAIRY PRODUCT	CALCIUM CONTENT (mg)
Skim Milk, 1 Cup	302
1% Milk, 1 Cup	300
2% Milk, 1 Cup	297
Whole Milk, 1 Cup	291
Buttermilk, 1 Cup	285
Swiss Cheese, 1 oz	272
American Cheese, 1 oz	174
Cottage Cheese, ½ Cup	77
Low Fat Plain Yogurt, 1 Cup	415
Low Fat Yogurt with Fruit, 1 Cup	345
Goat Milk, 1 Cup	280
Macaroni & Cheese, ½ Cup	181

NON-DAIRY PRODUCT	CALCIUM CONTENT (mg)
Tofu, 4 oz (Calcium Set)	145
Oysters, 1 Cup	90
Sardines w/ bones, 3 oz	345
Salmon w/ bones, 3 oz	99
Beans, 1 Cup (cooked)	70
Collards ½ Cup (cooked)	179
Kale ½ Cup (cooked)	103
Bok Choy, ½ Cup (cooked)	126
Molasses, 1 Tbsp	170
Almonds, 1 oz	80
Broccoli, 1 Cup	75

“Two servings of dairy” is equivalent to about 600 mg of calcium. The recommended daily calcium intake for men and women who form stones is 1000 mg per day. The typical American diet includes approximately 400 mg of calcium from non-dairy sources. **So**, two servings of dairy (600 mg) plus a normal diet (400 mg) equals the recommended intake of 1000 mg. If you do not eat dairy products, you may consume calcium supplements, with meals, but not more than 500 mg per day. To summarize, kidney stone formers should consume not more than 2 servings of dairy per day, or not more than 500 mg per day as a supplement.

Dietary Oxalates

Information for Kidney Stone Formers

If you form calcium-oxalate kidney stones, it is important that you limit your intake of dietary oxalates. Many healthy foods contain oxalate; we ask that you limit those with very high concentrations. Below is a list of food containing very high levels of oxalate. Small amounts of these foods periodically are less harmful than single large amounts or binges.

Grains

Wheat germ

Vegetables

Beets, fresh or pickled

Collards *

Okra

Pokeweed (poke greens)

Purslane leaves

Rhubarb

Soy foods (including soy milk)

Swiss chard

Spinach

Snacks

Nuts (peanuts, peanut butter, pecans)

Chocolate/Cocoa

Citrus Peel (candied lime, orange, lemon)

Beverages

Tea (green tea is OK)

Hot Chocolate/Chocolate Milk

Condiments

Black Pepper

* Keep in mind that cooking greens condenses the oxalate level per serving. In other words, a small spinach salad would contain much less oxalate than a small serving of cooked spinach.

Oxalate on Your Plate

Never had a calcium oxalate stone? Enjoy your spinach. If you *have* had one, try other leafy greens instead. And go easy on high-oxalate foods like these.

Food	Oxalate (mg)
Spinach (½ cup, cooked)	755
Spinach (1 cup, raw)	656
Rhubarb (½ cup, cooked)	541
Almonds (1 oz., 23 nuts)	122
Miso soup (1 cup)	111
Baked potato with skin (1)	97
Beets (½ cup, cooked)	76
Navy beans (½ cup, cooked)	76
Dates (3)	72
Okra (½ cup, cooked)	57
Post Wheat'n Bran Shredded Wheat Spoon Size (1¼ cups)	53
French fries (4 oz., 1½ cups)	51
Cashews (1 oz., 18 nuts)	49
Wheat berries (½ cup, cooked)	49
Kellogg's Raisin Bran (1 cup)	46
Post Original Shredded Wheat Spoon Size (1 cup)	45
Bulgur (½ cup, cooked)	43
Lentil soup (1 cup)	39
Chocolate syrup (2 Tbs.)	38
Snickers bar (1 bar, 1.86 oz.)	38
Post Bran Flakes (¾ cup)	36
Kellogg's All-Bran Complete Wheat Flakes (¾ cup)	34
Walnuts (1 oz., 14 halves)	31
Orange (1)	29
Kellogg's Original Frosted Mini-Wheats Bite Size (1 cup)	28
Peanuts (1 oz., 32 nuts)	27
Kellogg's All-Bran Original (½ cup)	26
Peanut butter (2 Tbs.)	26
Raspberries (½ cup)	24
Potato chips (1 oz.)	21
Kellogg's Müeslix (½ cup)	17
Tomato sauce (½ cup)	17
Red kidney beans (½ cup, cooked)	15
Pistachios (1 oz., 49 nuts)	14
Brown rice (½ cup, cooked)	12
Pecans (1 oz., 19 halves)	10

Adapted from Oxalate Content of Foods.xls
(regepl.bwh.harvard.edu/health/Oxalate/files).



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