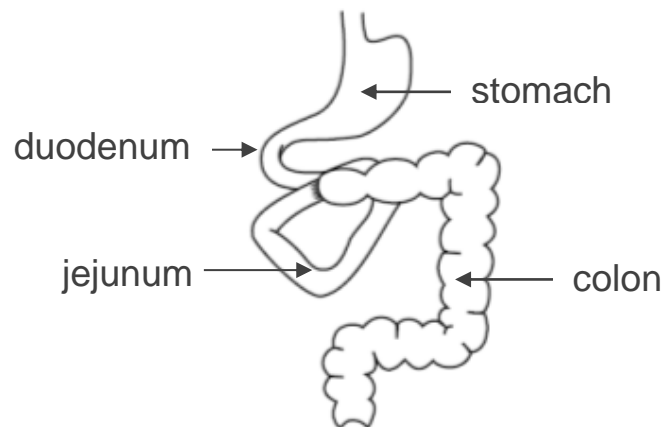


Low Oxalate Diet In Short Bowel Syndrome

When you have Short Bowel Syndrome with an intact colon, eating a diet low in oxalates can help prevent kidney stones from forming. This handout shows you which foods are high in oxalates and steps you can take to prevent kidney stones.



What are kidney stones?

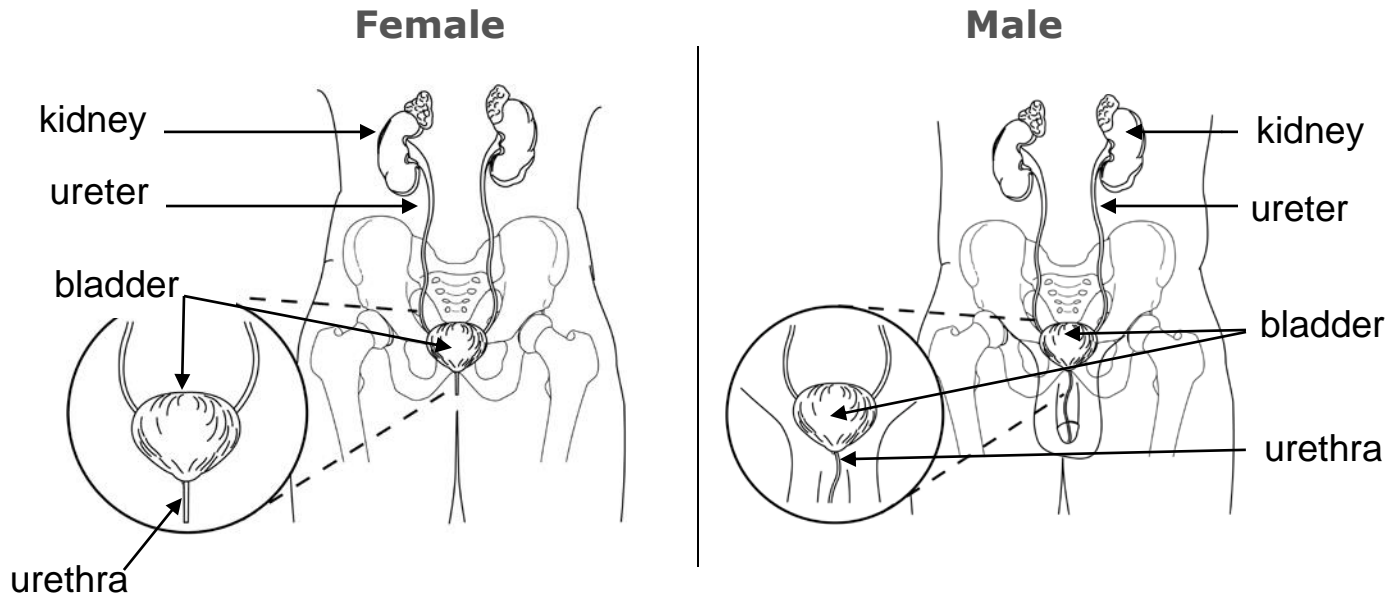
A kidney stone is a hard, stone-shaped mass that forms in the kidney. A stone normally begins as a small crystal-like material and it gradually builds into a larger solid mass.

Urine flows from the kidney, down through the ureters and into the bladder. Urine then flows from the bladder through the urethra and out your body when you go to the bathroom.

Very small kidney stones can travel through the urinary tract and pass out of the body in the urine.

However, larger kidney stones can become stuck in your urinary tract, causing severe pain.

The Urinary Tract



How do kidney stones form?

Oxalate is a natural substance found in many foods. A kidney stone forms when waste crystals in your urine stick together and slowly grow into a solid mass or stone. There are several kinds of kidney stones, but the most common stone is made of **calcium oxalate**. These stones are more likely to form when:

- there is too much oxalate in your urine
- there is too little liquid or urine
- the oxalate “sticks” to calcium while urine is being made
- your diet is too high in protein or Vitamin C

How does having Short Bowel Syndrome (SBS) increase my risk for developing kidney stones?

Kidney stones are more common when your body cannot absorb fat properly. Normally, calcium binds to oxalate in the intestine and are then passed out of the body in the stool. In SBS, fat from the food you eat is not absorbed and binds to calcium, leaving the oxalate behind in the colon. The oxalate is then absorbed by the colon and travels to the kidney, where it can form stones. When your body absorbs more oxalate, you have a higher risk of developing kidney stones.

What can I do to prevent developing kidney stones?

1. Drink enough fluids

The more fluids you drink, the more urine you will make. This will help prevent the buildup of waste chemicals or crystals in your urine, such as oxalate, from forming, and sticking together. Urine that is paler in colour will have a reduced concentration of waste products. Aiming to produce 2 litres of urine per day reduces your risk of developing kidney stones

Your Registered Dietitian will tell you how much fluid to drink each day and give you tips on how to get enough fluids.

Dietitian's suggestions:

1. _____

2. _____

3. _____

2. Avoid foods high in oxalate

Certain foods and drinks contain high amounts of oxalates. You do not need to stop eating these foods completely. However, keep in mind that eating these foods on a regular basis can increase your risk of developing kidney stones.

Food Group	High Oxalate Food Items
Beverages	Chocolate beverage mixes (powder and syrups), chocolate milk, cocoa powder, hot chocolate, juices made with berries high in oxalates (see fruits section), Rice Dream beverage, brewed tea
Breads and Cereals	Amaranth, buckwheat, All-bran and other high fibre cereals, kamut, quinoa, spelt, stone ground flour, wheat bran, wheat germ, whole wheat flour and bread, rice bran, soy flour, cornmeal/grits, pancakes, muesli
Vegetables	Beetroot and beet leaves, carrots and carrot juice, canned tomato sauce, tomato & V8 juice, dark leafy greens (such as spinach, Swiss chard, collards, dandelion and arugula), eggplant, green, snap & wax beans, green peppers, okra, parsnips, pumpkin, rutabaga, turnip, watercress, wax beans, white potatoes, sweet potatoes & yams, potato chips, cassava
Fruits	Figs, kiwi, orange, tangerine, grapefruit, raspberries, currants, rhubarb (most consider it a fruit), avocado, carambola (star fruit), dried fruit (figs, dates, prunes, pineapple), canned pineapple
Legumes, Nuts, Seeds	Baked beans, legumes such as kidney beans, black beans, navy beans and lentils, peanuts/peanut butter and other nuts/nut butters, sesame seeds, soy nut, sunflower seeds, tahini, tofu, pine nuts
Desserts	Fruitcake, Fig Newtons, brownies, cake, chocolate chip cookies, chocolate, candies with nuts
Other	Soy products such as cheese, yogurt and soy-based meat analogs (vegetarian burgers, hot dogs and deli meats) and tofu products, soy protein isolate, miso, miso soup, stuffing, chili, pizza, lasagna, olives (10), fudge and chocolate syrup/sauce

3. Increase your citric acid intake

Citric acid is an organic acid and a natural component of many fruits and fruit juices. Citric acid, not to be confused with ascorbic acid (Vitamin C), can help decrease kidney stones from forming. The best food sources are lemons and limes. Try squeezing fresh lemon or lime juice into your soda, tea or water or make your own lemonade. Use fresh lemon juice in salad dressing or add to fish or in marinades.

Limit the Vitamin C content of your diet.

Oxalate is made when Vitamin C rich foods are broken down and can increase the risk of kidney stone formation.

Vitamin C supplements in high doses (over 1000 mg a day) **are not** recommended unless directed by your doctor. Vitamin C supplements are proven to increase urinary oxalate, which will increase your risk of developing kidney stones.

4. Limit the amount of fat in your diet

Avoid eating too many fatty foods, for example butter, margarine, oils, spreads, salad dressings, cream, fried foods, cakes, pies, pastries, croissants, biscuits and take out foods.

5. Eat Enough Calcium

Some people may think avoiding calcium may keep stones from forming, but the opposite is true. Calcium is a nutrient found in dairy products, such as yogurt, milk and cheese. You need to eat calcium so that it can bind with oxalate in the stomach and intestine before it is taken to the kidneys. A diet rich in calcium helps reduce the amount of oxalate being absorbed by your body, so stones are less likely to form.

Studies show that people who eat the recommended amount of calcium (1000 to 1200 mg a day) have a decreased risk of developing kidney stones.

Try to eat 2 to 3 servings of dairy foods or high calcium foods every day. It is recommended you get your calcium from foods rather than supplements, as calcium in the form of a supplement may raise your chances of forming new calcium oxalate stones. However, some people may need a calcium supplement to help them meet their needs.

Calcium supplements are not recommended unless directed by your doctor.

Tip

If you decide to eat a food that is high in oxalates, eating a high calcium food **at the same time** (such as milk) can help bind the oxalates. See the chart on the next page for examples of foods that have calcium.

Food Item	Serving	Calcium (mg)
Firm cheese (such as cheddar or Swiss)	1.5 oz (50 g)	300 to 400
Soft cheese(such as blue, feta, mozzarella)	1.5 oz (50 g)	200 to 300
Parmesan	1 Tbsp	55
Milk	1 cup (250 ml)	300
Yogurt, low fat	$\frac{3}{4}$ cup (175 ml) 100 ml small container	200-300 120-170
Orange juice, calcium-fortified	1 cup (250 ml)	300
Salmon, canned with bones	1/3 can (75 g)	160
Cottage Cheese, 1%	$\frac{1}{2}$ cup (125 ml)	75
Orange	1 medium	60
Bok Choy, Kale, cooked	1 cup (250 ml)	160
Broccoli, cooked	1 cup (250 ml)	60
Instant oatmeal-fortified with calcium	1 pouch	140

Dietitian’s suggestions:

1. _____

2. _____

Sample Menu

Breakfast:

1 cup calcium fortified oatmeal with milk and/or blueberries
or
2 scrambled/fried/pouched eggs or omelet and 1 English muffin or 2 slices of toast
1-2 tsp jelly
or
French toast with maple syrup

Lunch:

4 oz turkey breast or ham or roast beef, 1 slice cheese
2 slices bread or bun with iceberg lettuce, 3 slices or tomatoes, mayo and or mustard
or
Wrap made with egg or cold cuts or canned tuna/salmon filled with iceberg lettuce, avocado, cucumber

Dinner:

Any meat (beef, pork, lamb) chicken or fish, white rice, or white pasta
or
Beef or chicken curry
or
Chicken nuggets
or
Meatloaf
or
White pasta with alfredo sauce or Mac and cheese

With a salad (iceberg lettuce, cucumber) or vegetables (broccoli, cauliflower, peas, squash, zucchini, mixed vegetables)

Snacks:

Banana, apple, pear, blueberries, grapes, melons, animal crackers, arrowroot cookies, cheese and crackers, pretzels