



University Hospitals Birmingham
NHS Foundation Trust



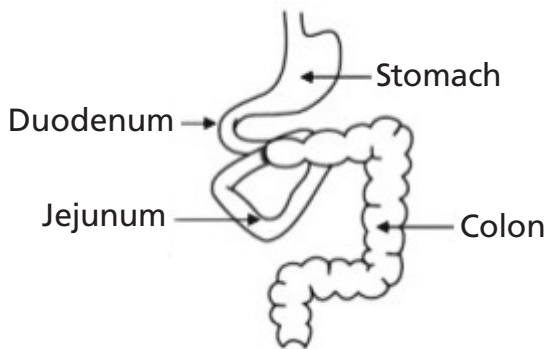
Low Oxalate Diet for Short Bowel Syndrome

Building healthier lives

UHB is a no smoking Trust

When you have Short Bowel Syndrome (SBS) with an intact colon, you are at a higher risk of developing kidney stones. There are several types of kidney stones, but the most common stone is made of calcium oxalate.

Eating a diet low in oxalates may help prevent kidney stones from forming. This diet sheet aims to advise you on 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. Urine flows from the kidney, down into the bladder. Urine then flows from the bladder and out your body when you go to the toilet. Very small kidney stones can be passed out of the body in the urine. However, larger kidney stones can become stuck in your urinary tract, causing severe pain.

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. 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 increase my risk of developing kidney stones?

Kidney stones are more common when your body cannot absorb fat properly. Normally, calcium binds to oxalate in the intestine and is then passed out of the body in the stool. In Short Bowel Syndrome with an intact colon, 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. Aiming to pass at least 2.5L of urine per day will help prevent the build-up 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.

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 in oxalates	Suitable alternatives
Beverages	Chocolate beverages, including powdered and syrup based chocolate milkshake, cocoa powder and hot chocolate. Cups of tea including berry flavoured herbal tea, are also high in oxalates	Water, squash, milky weak tea or coffee, Bovril, skimmed or semi skimmed milk, fruit juices (apple, pineapple, grape, grapefruit, cranberry, lemon/lime juice)
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, muesli	White flour or baked products, e.g. bread, pasta, spaghetti, macaroni, crumpets, English muffins, white rice, plain couscous, noodles, Rice Krispies/ puffed rice cornflakes/ frosted flakes, Special K, Sugar Puffs, Cheerios
Vegetables*	<p>Beetroot, carrots and carrot juice, canned tomato and tomato sauce, dark leafy greens (e.g. spinach, Swiss chard, kale), aubergine, sugar snap peas/mangetouts, green peppers, okra, parsnips, pumpkin, turnip, watercress, white potatoes, sweet potatoes, yams, potato-based crisps, cassava</p> <p>*Soaking and cooking certain vegetables in a large pot of boiling water can reduce their oxalate content</p>	<p>Asparagus, avocado, cauliflower, cucumber, lettuce, peas, peppers, onions</p> <p>*Soaking and cooking certain vegetables in a large pot of boiling water can reduce their oxalate content</p>

Fruits	Figs, kiwi, orange, tangerine, grapefruit, raspberries, strawberries, currants, rhubarb, avocado, star fruit, dried fruit (dates, prunes, cranberries, blueberries, currants), canned pineapple	Apples, banana, fresh apricots, cherries, grapefruit, grapes, lemon, melon, nectarines, papaya, passion fruit, peaches, pear, pineapple, strawberries
Legumes, Seeds, Nuts	Baked beans, legumes (e.g. kidney beans, black beans, cannelloni beans), lentils*, peanuts/peanut butter (and other nuts/nut butters), pumpkin seeds, sunflower seeds. Tahini, tofu, pine nuts. *Soaking lentils before cooking can reduce their oxalate content	*Soaking lentils before cooking can reduce their oxalate content
Desserts	Cakes and desserts including dried fruit or chocolate, for example, chocolate chip cookies, fruitcake or brownies Limit fudge and chocolate sauce	Tapioca, Blancmange, Puddings made with skimmed milk, frozen yoghurt, jelly
Other	Soy products such as cheese, yogurt and soy-protein (vegetarian burgers, hot dogs and deli meats) and tofu products, soy protein isolate, miso, miso soup, stuffing, chili, pizza, lasagne, olives	Jams, marmalade honey, syrup, treacle low fat dressings and sauces – try herbs, spices, vinegar, lemon juice

3. Increase your citric acid intake

Citric acid is a natural part 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 dressings, add to fish, or use in marinades.

4. 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 likely to increase urinary oxalate, which will increase your risk of developing kidney stones.

5. Limit the amount of fat in your diet

In the presence of lots of fat in the colon, calcium will bind to this, preventing the normal combining of calcium and oxalate. Oxalate, which would normally be excreted in stool, is instead absorbed through the colon and passed in higher than normal amounts through the kidneys. 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.

6. 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.

Try to eat 2–3 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. If your doctor or Dietitian are concerned that you are not meeting your daily calcium requirement, a calcium supplement may still be recommended to help to prevent osteoporosis (weak bones).

7. Increase magnesium intakes with meals as it binds oxalate in the gastrointestinal tract

High magnesium foods include shredded wheat, fortified cereals, oats, lentils (soaked before cooking), chickpeas, almonds, cashew nuts, mackerel, yoghurt, and dark chocolate. Ask your Dietitian for more advice.

8. Try to lose weight if your Body Mass Index (BMI) is >30

Having a BMI over 30 may increase the risk of kidney stones developing as obesity may cause lower urinary pH (more acidic urine). Consult your Dietitian if you feel you need to lose weight.

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. It may be that you require some lactose-free dairy products, if you have had difficulty absorbing lactose in the past. Consult your Specialist Dietitian for advice.

If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email **patientexperience@uhb.nhs.uk**.

Dietitian

Queen Elizabeth Hospital Birmingham
Mindelsohn Way, Edgbaston
Birmingham, B15 2GW
Telephone: 0121 371 2000
