PATIENT INFORMATION

# Low Oxalate Diet

## Your guide to a low oxalate diet

Review these frequently asked questions to learn more about oxalates and how a low oxalate diet can help prevent kidney stones..

### "What is oxalate?"

Most oxalate is a waste product made by the body and has no function in humans. The most common type of kidney stone (80%) is made of calcium and oxalate.

Other sources of oxalate include:

- Eating foods high in oxalate
- Intestinal over absorption (patients who have had intestinal resections due to inflammatory bowel disease or gastric bypass surgery)
- Excess amounts of vitamin C (2,000 mg or more per day; the excess converts to oxalate)
- Abnormalities of metabolism

### "My urologist told me to cut back on oxalate. My cardiologist told me to eat plenty of vegetables and cut back on fats. What am I supposed to do?"

It can be challenging when you have doctors telling you different things. One doctor is worried about your heart (diabetes, hypertension, etc), and the other is worried about your kidney stones. Like any lifestyle change, you must remember to cut back in moderation.

It is not reasonable to cut out fruits and vegetables from your diet, as they provide so many important nutrients. Many fruits and vegetables have low oxalate content and can be regularly included in your diet (see list included in this brochure).

If you are going to have a high oxalate food, such as a spinach salad, just limit the amount of spinach you are having. Also, remember to flush out the extra oxalate you are eating with a glass of water before and after your meal.

### " When I go on the internet to look up oxalate content of certain foods, I find different sites list different numbers for the same food. Why is this?"

Oxalate content in a single food group varies based on a number of different conditions (e.g., time of year, type of soil used for growing). Not all researchers take these factors into account.

### " What effect does bowel disease and/ or intestinal surgeries with malabsorption have on my oxalate levels?"

There is a definite correlation between patients who suffer from bowel disease and malabsorption problems and the formation of kidney stones. Their urine is more acidic, citrate levels are lower, and oxalate levels are much higher. If you have had an ileal resection you may experience an increase in your oxalate levels due to malabsorption problems.

In bowel disease, fatty acids and bile that are normally absorbed by the small intestine reach the colon. When fatty acids and bile reach the colon, they can damage the colon lining allowing oxalate to pass through the damaged lining into the blood and then into the urine via the kidneys. When calcium and oxalate are together in the kidney, they can bind together to form crystals. These crystals can join together to form calcium oxalate kidney stones.

### "My doctor said that limiting my fat intake will also help lower my oxalate level. How is this?"

For patients who suffer from small bowel disease or malabsorption, it is recommended that dietary fat intake be controlled. Excess fat will bind with calcium in food, leaving oxalate by itself to be reabsorbed by the colon and back into the blood stream. If too much oxalate is absorbed, it will combine with calcium in the kidney and can lead to calcium oxalate stones.

Your doctor may also prescribe a drug called Cholestyramine. This is a drug taken at each meal that binds fatty acids, bile, and oxalate so all three can leave the body.

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### "My doctor said I am making calcium oxalate stones. Should I cut back on dairy products too?"

Unless told otherwise by your doctor, your diet should have between 800 and 1,200 mg of calcium per day. Eating a diet low in calcium is not advised. In fact, studies have shown that eating low calcium diets will increase calcium oxalate stone risk. Oxalate and calcium bind together in your intestine and leave the body together. If you eat a low calcium diet then oxalate has no partner to leave the body with. Oxalate will then be absorbed back into your system leading to higher oxalate levels in your body.

### "I am lactose intolerant. What can I do to increase my dietary calcium?"

Being lactose intolerant is a common problem. You can get calcium from other sources other than dairy products. Cereals and orange juice are now fortified with calcium (see below list). Your doctor may also tell you to take calcium supplements with each meal to help bind with oxalate so it cannot be reabsorbed back into your bloodstream. Trying reduced lactose dairy products may also be an option, and many yogurt products - which are also high in calcium - are lactose-free.

### Non-dairy calcium rich foods

**Foods containing 50 mg of calcium:**

| | |
|---|---|
| Bread | 2 slices |
| Broccoli | 3/4 cup |
| Kidney beans, lima beans, lentils | 1 cup |
| Orange | medium |
| Tahini | 2 tbsp |

**Foods containing 75 mg of calcium:**

| | |
|---|---|
| Bok choy or kale, cooked | 1/2 cup |
| Chickpeas | 1 cup |
| Almonds | 1/4 cup |

**Foods containing 250 mg of calcium:**

| | |
|---|---|
| Salmon, canned with bones | 1/2 can |
| Sardines, canned with bones | 1/2 can |

### "Because I am lactose intolerant, I eat a lot of soy products. I heard that soy is high in oxalate."

Recent research has concluded that the soy products listed below do have high levels of oxalate and should be eaten in moderation.

| | Serving Size (ounces) | Oxalate Content (mg/serving) |
|---|---|---|
| Textured vegetable protein | 3 | 496 |
| Soy nuts | 1 | 392 |
| Soy beverage | 8.5 | 336 |
| Tofu with calcium | 3 | 235 |
| Soy yogurt | 8.5 | 113 |
| Tofu with magnesium | 3 | 94 |
| Soy burger | 2.5 | 58 |
| Tempeh | 2 | 23 |
| Soy cheese | 1 | 16 |

Source: "Oxalate Content of Soybean Seeds, Soy foods, and other Edible Legumes", LK Massey, Palmer RG, Horner, HT. Journal of Agricultural and Food Chemistry, September 2001.

## Facts

- Oxalate is made in plants, animals and humans; highest amounts appear in certain plant foods
- The function of oxalate is to help plants dispose of excess calcium
- Our bodies have no use for oxalate and it is excreted in the urine
- Our bodies always have some varying degree of oxalate
- About 40%-50% of oxalate is from outside sources (foods you eat) and can be much higher on a high oxalate diet

| Cereals and Cereal Products | mg of Oxalate /100g |
|---|---|
| Bran Flakes | 141 |
| Cake, fruit | 11.8 |
| Cake, sponge | 7.4 |
| Crackers, soybean | 207 |
| Fiber One | 142 |
| Grits | 41 |
| Wheat Germ | 269 |
| White bread | 14.3 |
| **Meats** | |
| Liver | 7.1 |
| **Fruits** | |
| Berries, black | 18 |
| Berries, blue | 15 |
| Berries, Green Goose | 88 |
| Berries, raspberries black | 53 |
| Berries, raspberries red | 15 |
| Berries, strawberries, can | 15 |
| Berries, strawberries raw | 10 |
| Currants, red | 19 |
| Fruit salad, can | 12 |
| Grapes, concord | 25 |
| Lemon peel | 83 |
| Lime peel | 110 |
| Peaches, Albert | 5 |
| Plums, Damson | 10 |
| Preserves, strawberry jam | 9.4 |
| Prunes, Italian | 5.8 |
| Rhubarb, can | 600 |
| Rhubarb, stewed, no sugar | 800 |
| **Vegetables** | |
| Asparagus | 5.2 |
| Beans, green boiled | 15 |
| Beetroot, boiled | 675 |
| Celery | 20 |
| Chard, swiss | 645 |
| Collards | 74 |
| Corn, yellow | 5.2 |
| Dandelion greens | 24.6 |
| **Vegetables** | |
| Eggplant | 18 |
| Escarole | 31 |
| Kale | 13 |
| Leek | 89 |
| Mustard greens | 7.7 |
| Okra | 146 |
| Parsley, raw | 100 |
| Parsnips | 10 |
| Pepper, green | 16 |
| Potatoes, sweet | 6 |
| Rutabagas | 19 |
| Spinach | 600 |
| Squash, summer | 22 |
| Watercress | 10 |
| **Nuts** | |
| Peanuts, roasted | 187 |
| Peanut butter | 95.8 |
| Pecans | 22 |
| **Confections** | |
| Chocolate | 117 |
| Butterfinger (candy bar) | 53.5 |
| Marmalade | 10.8 |
| **Beverages** | |
| Tea, Indian; 2 min infusion | 55 |
| Tea, Indian; 4 min infusion | 72 |
| Tea, Indian; 6 min infusion | 78 |
| **Juices** | |
| Cranberry juice | 6.6 |
| Grape juice | 5.8 |
| Tomato juice | 5.5 |
| **Miscellaneous** | |
| Cocoa, dry powder | 623 |
| Coffee instant (Nescafe) | 33 |
| Ovaltine, powder can | 35 |
| Pepper, black | 419 |
| Vegetable soup | 5 |

### Our hours of operation are

Monday – Friday, 07:00 a.m. – 07:00 p.m. CT.

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