

# Patient Information

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## DIET & KIDNEY STONES

### What diet do I need to follow?

To avoid future stone formation, you should **MAKE SURE YOU HAVE A GOOD** fluid intake.

**YOU SHOULD AVOID** excessive intake of **THE FOLLOWING**:

- sodium (salt or salty foods)
- oxalate
- animal proteins

**ALL OF THESE** tend to increase your risk for new stone formation. Your doctor or dietician can provide you with medications and diet modifications that can promote the health of your kidneys.

Diet modification and medications will be adjusted depending on the chemicals that make up your kidney stones. Calcium oxalate, uric acid and calcium phosphate stones respond better to dietary interventions. Other types of stones, such as cystine and struvite stones, are less responsive to diet modification.

The following diet modifications are described:

- Adequate fluid, citrate and calcium intakes
- Decreased oxalate intake
- Decreased sodium intake
- Decreased animal (red meat) proteins

### 1. INCREASE FLUID INTAKE

Your fluid intake should be increased to at least 8 - 10 glasses per day (2.5 to 3 liters). This would help dilute your urine and through lowered crystal concentration stone formation might be prevented. Half of the beverages taken should preferably be water.

In hot, humid weather conditions or with major physical exercise such as heavy work or sport activities you should drink more.

It is important that your fluid intake is distributed equally over 24 hours. For example, you should drink throughout the course of the day and before going to bed.

### What beverages should I drink?

Mineral water, tap or bottled water and fruit juices are particularly beneficial. You should choose unsweetened beverages; water is adequate most of the time.

**Avoid:** Black tea, iced tea, COLAS, Root Beer, cocoa based beverages and grapefruit juice

### 2. SODIUM or SALT

A high salt content in your diet (added salt and/or salty foods) increases the risk of stone formation by increasing the excretion of calcium in the urine. On the other hand, a drastic reduction of salt in your diet might decrease the amount of urine you produce.

Therefore, a moderately reduced salt intake is recommended. Your dietician can help you with diet modifications required for you.

To control the amount of salt in your diet, limit the use of the following foods:

#### Spices/Condiments:

- Table salt
- Sauerkraut, olives, dill pickles
- Garlic and onion salts
- Salt substitutes: sea salt, "Nu-salt", MSG.
- Soy sauce, steak and Worcestershire sauce,
- Most cheeses
- chili sauce, gravy, ketchup

When preparing your meals try to reduce the amount of salt. Instead of salt, try using herbs, spices, fresh or powdered onion and garlic, "Mrs. Dash" or McCormick's "no salt added", and lemon juice as flavour enhancers.

#### Highly Salted Foods:

- Canned vegetables and vegetable juices
  - Processed cheese such as cheese spreads and single slice cheese
  - Canned and powdered soups
  - Prepared, processed and most fast foods
  - Frozen dinners
  - Pickled and salt-cured foods
  - Bouillon cubes
  - Restaurant food
  - Salted snack foods: crackers, chips, nuts, pretzels
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### 3. DECREASE OXALATE INTAKE

Foods high in oxalates should be avoided. Oxalates can also be formed when more than 1000 mg of vitamin C is taken in high risk patients.

**Avoid:**

- Spinach, dark green leafy vegetables, beet greens
- Potatoes, beets, rhubarb, turnip, strawberries
- Nuts, peanut butter, chocolate, wheat bran

**Limit:**

- Cocoa powder, coffee and draft beer
- Berries: blackberries, gooseberries, black raspberries
- Concord grapes, red currants, peel of lemons, lime and orange
- Beans (wax, baked or legumes), summer squash, eggplant, leeks, celery, wheat germ, whole-wheat flour, grits (white corn)
- Soy milk, peanut butter and tofu

### 4. DECREASE PURINE (and Animal Proteins) INTAKE

Purines, especially from animal protein sources, form uric acid crystals in the urine. This can lead to kidney stone formation. It is recommended that you limit your daily intake of animal proteins to 4-6 oz. or 100-150 grams.

**Limit the following high purine foods:**

- Organ meats: liver, kidney, brain, sweetbreads, calf tongue
- Meat extracts, meat broth, bouillons and consommés, gravy and mincemeat
- Sardines, herring, mackerel, scallops, mussels, canned salmon, caviar or roe, anchovies
- Game meats: goose, duck and partridge

### 5. CITRATE

Citrate binds calcium in your urine and can be incorporated into your diet to prevent stone formation. Citrate is commonly found in fruit juices.

Beverages with desired citrate concentration e.g. reconstituted lemon juice (add 4 ounces of lemon juice to two litres of water each day).

### 6. CALCIUM

Calcium and Vitamin D are required to maintain healthy bones. Therefore, it is important to include enough calcium in your diet. Contrary to previous beliefs of calcium leading to stone formation, you should NOT restrict your dietary calcium intake. Discuss with your dietician whether you should take calcium supplements in which case calcium citrate is preferable. In your daily diet you should include a minimum of 3 servings of calcium-rich foods.

**Try to include the following high calcium foods in your diet:**

- Dairy products: milk, milk-based puddings, milkshakes, custard, yogurt, ice cream, and low sodium natural cheeses such as brick, cheddar, Colby, Ementhal, farmers and mozzarella
- Calcium fortified beverages such as orange juice

**Avoid:**

- Nuts
- Soy based foods e.g. tofu and soy milk
- Chocolate flavored dairy product
- Over-the-counter calcium preparations such as calcium-containing antacid medications (e.g. Tums, Rolaids), which should only be taken on the advice of your physician.