

Healthy Kidneys 15



Calcium & Uric Acid Stones

This booklet will specifically tell you about Calcium & Uric Acid stones, their symptoms, causes, detection & prevention.

The urinary system is made up of the kidneys, the ureters, the bladder, and the urethra. Each plays an important role in helping your body to eliminate waste products in the form of urine.

A kidney stone can develop when certain chemicals in your urine form crystals those stick together. The crystals may grow into a stone ranging in size from a grain of sand to a golf ball. Small stones can pass through the urinary system without causing problems. However, larger stones might block the flow of urine or irritate the lining of the urinary tract.

Kidney stones are one of the most painful disorders to afflict humans. This ancient health problem has tormented people for thousands of years. Evidence of kidney stones have found in an Egyptian mummy. Although men tend to be affected more frequently than women, the male to female ratio is approximately 3:1, with women having a higher incidence of infectious stones. Most kidney stones pass out of the body without any intervention by a physician.

Calcium Stones

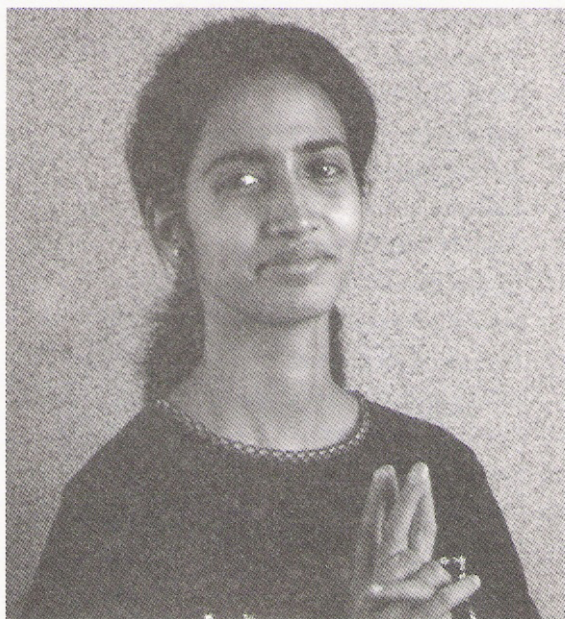
Calcium oxalate are the most common type of stone (85%) to human beings. Calcium is a mineral found in dairy foods. An essential nutrient and major component of bone. It binds to oxalate in urine to form stones

Oxalate is an insoluble component of many foods. High quantities are found in tea, coffee, rhubarb and spinach, although most oxalate in urine is made in the liver as a by-product of vitamin C and meat protein metabolism.

How can you prevent calcium oxalate stone formation?

Some people who develop calcium oxalate stones have a specific medical disease which is causing the problem of stone. This disease, hyperparathyroidism, is not common. In the absence of a treatable metabolic problem there are still many things you can do.

These stones are made of calcium and oxalate, so it would seem sensible to exclude these from the diet to solve the problem. Unfortunately it is not that simple.



Calcium Restriction

This was once the advice given to stone formers, and you may hear this even today. This is no longer recommended. Calcium is very essential for bones, nerve conduction, blood coagulation and normal functioning of heart. Restriction of calcium containing diet can adversely effect these functions and hence only excess of calcium should be avoided.

Foods High in Calcium (Should be avoided in excess)

Low fat cheese - mozzarella, yoghurt, tinned salmon with bones, spinach, broccoli, low fat ice cream etc.

Oxalate Restriction

Oxalate is common in foods, and it is not difficult to consume a large amount of oxalate within an otherwise healthy diet. This can increase the risk of developing stones. Below is a list of common foods high in oxalate. Unfortunately there may be some of your favorites.

Foods High in Oxalate

Chocolate, Tea - including herbal teas, Raspberries, Strawberries, Soy sauce, Baked beans, Peanuts and Pecans, Beer, Juices made from berries.

You will never have a perfect diet and any of the above in moderation is fine for stone formers. It is excessive intake, which is the problem in a few people.

What causes calcium phosphate stones?

Calcium phosphate stones are rare in their pure form. More commonly they can form a small component of calcium oxalate stones. When the stones are in pure form, the diagnosis of renal tubular acidosis is considered.

Uric acid stones

About 5% to 10% of all kidney stones are uric acid stones. Uric acid is a waste of protein metabolism (break down of food like meats). It causes problems because humans do not possess the enzyme to digest it to a soluble form. When uric acid precipitates it can cause kidney stones or gout. Gout is a problem where uric acid crystals deposit in the joints, causing a painful inflammatory response. These stones are more common among men.

How do uric acid stones form?

Uric acid is a waste product of protein metabolism. Like any stone, uric acid stones form when too much uric acid is present in the urine which can not be dissolved. A short period of dehydration in a susceptible individual is enough to begin stone formation. A sudden uric acid load from food can also precipitate a new stone. This means that what you eat and drink directly affects your chance of developing stone.

So what do I do?

Drink enough – the colour of your urine must be equivalent to the colour of water, consistently. Because stones form quickly, a single hot day working in the open field could lead to a stone.

Drinking water is so effective that you can actually dissolve stones that have already formed.

Watch your diet - diet will have a major effect. There are two aspects to diet control. One is the acid in the diet, and the other is the concentration of uric acid in various foods;

Acid from food

Uric acid's solubility in urine is dependent on the pH, or

acidity of the urine. At a pH of 7 (neutral), urine can dissolve 1000 times the amount of uric acid than at pH 5 (acidic). Most people who form frequent uric acid stones have acidic urine. Urine becomes acidic in response to diet. Proteins are the greatest source of acid in the diet. After a meal high in protein conditions become ideal for stone formation. So avoid eating large amounts of meat at one sitting and drink plenty of fluids with your meal. Add some foods, which have an anti-acid effect into the meal. Dairy products are foods of this type.

Uric acid in food

50% of the uric acid in the body comes from food.

Foods high in uric acid	
Shellfish	Lobster, crayfish, prawns, mussels, oysters, crabs, scallops.
Organ meats	Liver, kidney, brains, sweetbreads
Red meat	Any red meat.
Vegetables	Peas, beans
Fish	Anchovies, mackerel, sardines, herring.

Limit Alcohol - Alcohol, especially in overdose can cause an attack of gout or kidney stones. The effect of alcohol is to cause dehydration, which then increases the risk of uric acid precipitation. If you do drink alcohol, space your drinks with water to minimize the risks.

Points to remember

- Drink enough water
- Limit your protein & calcium intake
- Don't eat too much foods high in uric acid
- Avoid excessive alcohol
- Check your uric acid level in the blood

Please also refer the following information booklets from India Renal Foundation for more information.

1. Choosing Your Treatment
2. Haemodialysis

3. Peritoneal Dialysis
4. Transplantation
5. Diabetes & Kidney Failure
6. High Blood Pressure & Kidney Failure
7. Kidney Failure & Anaemia
8. Kidney Stones & Kidney Failure
9. Benign Prostate Disease (BPH)
10. Prostate Cancer
11. Urinary Tract Infection (UTI)
12. Polycystic Kidney Disease (PKD)
13. Urinary system & Kidney Stones
14. Cystine & Struvite Stones
15. Calcium & Uric Acid Stones
16. Treatment of Kidney Stones



Publication of this booklet was done with the help of
**SIDDHI VINAYAK STONE CLINIC
 AND LITHOTRIPSY CENTRE**

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