



SOLUTION

Your Pharmacy Friend

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Kidney Stone

Introduction, Symptoms, Cause, Diagnosis, Management and Treatments

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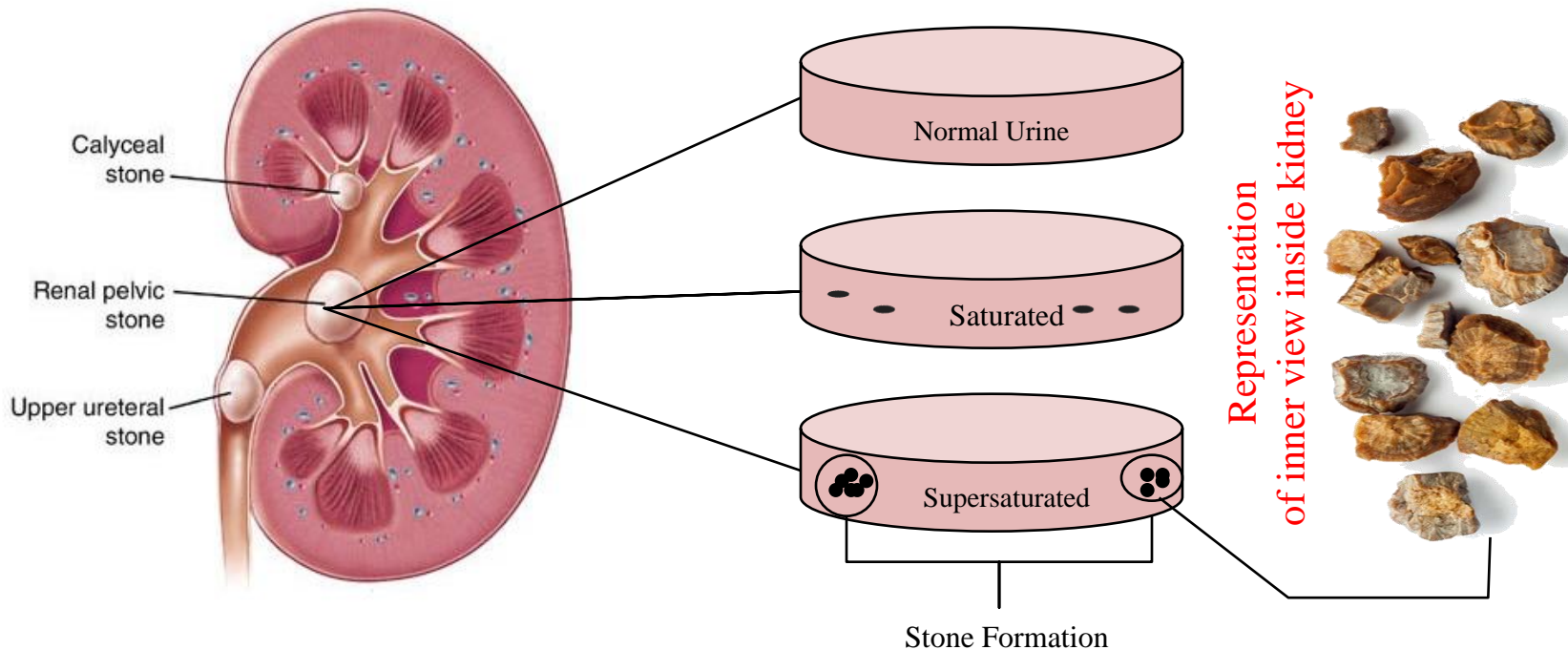
Function of Kidney- Kidney is one of most Important organ in our body, it has several vital functions, but with reference to the topic its function is to clear the unwanted material from the body in the form of urine. This unwanted material is actually a solution of component like- [Urea](#), [Sodium](#), [Chloride](#), [Potassium](#), [Cretinine](#) and others.

Stone- The simplest meaning of ‘stone’ is mass which is made by several tiny particle which are basically non soluble in water (urine)

Principle of stone formation- The formation of kidney stone is a result of [super saturation of solute present in urine](#). Super saturation is a phenomenon in which solvent become fully saturated with solute and no further solute is allowed to dissolve. After some time those undissolved solute starts to settle down and form an insoluble heavy mass which is termed as stone, and finally kidney stone.

Kidney Stone

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Super saturation is a phenomenon in which solute become insoluble due to higher concentration

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Kidney Stone

Normal and Severe symptoms of kidney stone

1. Kidney stone pain is also known as renal colic pain
2. Severe pain in the side and back, below the ribs
3. Kidney stone pain appears suddenly when stone moves, and pain depends on location
4. Pain usually follow come and go pattern.
5. Patient will feel the pain on his side and back, below his/her ribs. Pain may move to belly and groin area as the stone moves down towards the urinary tract.
6. Pain and burning sensation while urinating
7. False feeling of urination
8. Nausea and vomiting
9. Sometimes blood drop appears in the urine while urinating
10. Urine become cloudy and smelly due to presence of excess minerals and solute
11. Low to high fever with chilling
12. Urinate small amount of urine, even it feels like huge pressure to urinate

Causes of Kidney Stone

Kidney stones often have no definite, single cause, although several factors may increase the risk. Kidney stones form when our urine contains more **crystal-forming substances** such as **calcium-oxalate** and **uric acid** than the fluid in your urine can dilute. At the same time, when urine may lack substances that prevent crystals from sticking together, creating an ideal environment for kidney stones to form.

Risk Factors- dehydration, obesity, high-protein, salt, or glucose diet, hyper parathyroid condition, gastric bypass surgery, inflammatory bowel diseases that increase calcium absorption taking medications such as diuretics, anti-seizure drugs, and calcium-based antacids

Causes of Kidney Stone

Type of Stone	Food to be avoided in this type of kidney stone
Calcium Oxalate Stones	Nuts and nut products usually available as snakes in market
	Peanuts—which are legumes, not nuts, and are high in oxalate contain
	Rhubarb, Spinach, Wheat Bran
	Beef, chicken, and pork, especially organ meats
Calcium Phosphate Stones	Beef, chicken, and pork, especially organ meats
	Eggs, fish and shellfish, milk, cheese, and other dairy products (Highly rich in protein)
	All other type of animal protein

Causes of **Kidney Stone**

Type of Stone	Food to be avoided in this type of kidney stone
Uric Acid Stones	Beef, chicken, and pork, especially organ meats
	Eggs, Fish and shellfish (Rich in Purine)
	Milk, cheese, and other dairy products (Protein which give Purine)
Microbial Stone	Due to Urinary tract infection

Reference- <https://www.niddk.nih.gov/health-information/urologic-diseases/kidney-stones/eating-diet-nutrition>

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Diagnosis of Kidney Stone

Diagnosis of kidney stones requires a complete health history assessment and a physical exam. Other tests include:

1. Blood tests for calcium, phosphorus, uric acid, and electrolytes
2. Blood urea nitrogen (BUN) and Creatinine to assess kidney functioning
3. Urinalysis to check for crystals, bacteria, blood, and white cells
4. Examination of passed stones to determine type
5. Abdominal X-rays
6. Intravenous pyelogram
7. Ultrasound of the kidney (this is the preferred study)
8. MRI of the abdomen and kidneys
9. Abdominal CT scan

Treatment of **Kidney Stone**

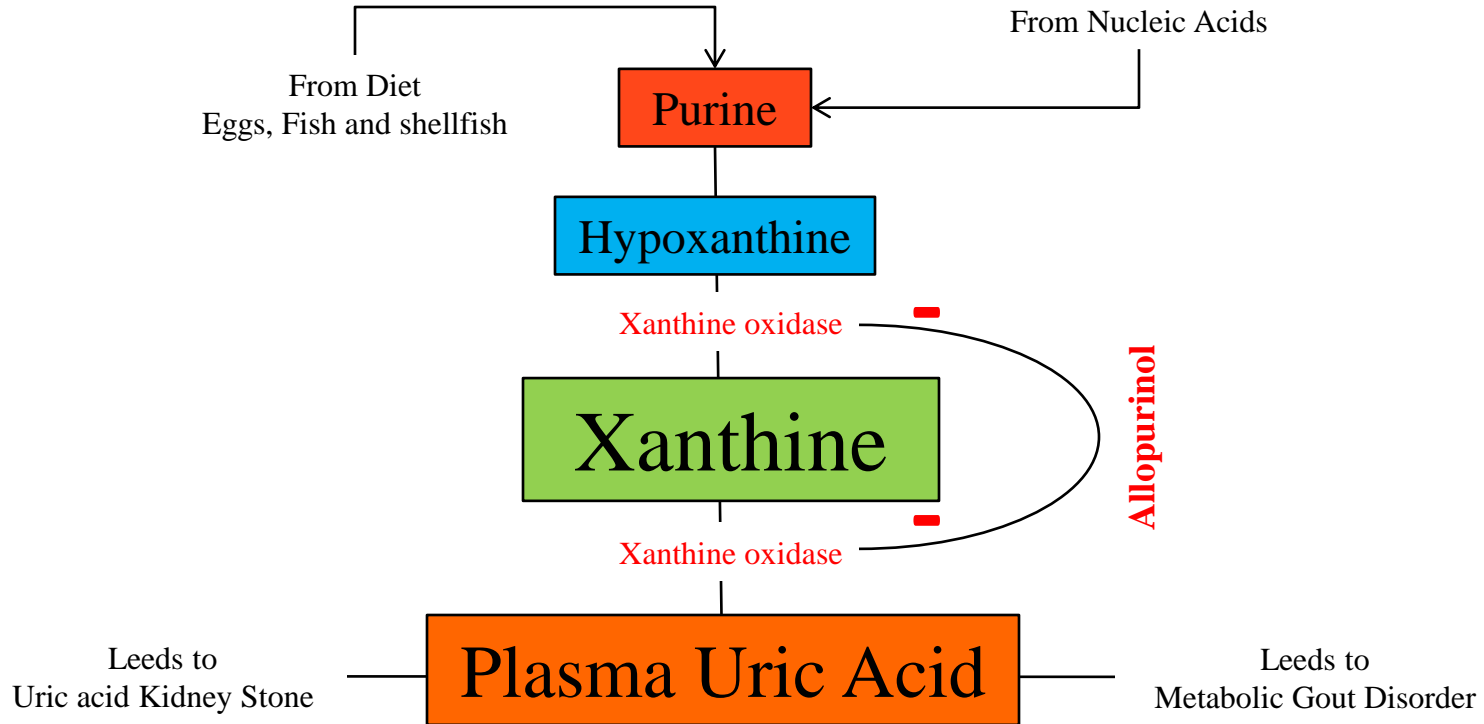
Medication- Pain relief may require narcotic medications. The presence of infection requires treatment with antibiotics. Other medications include:

1. Allopurinol for uric acid stones
2. Diuretics
3. Sodium bicarbonate or sodium citrate
4. Phosphorus solutions

Lithotripsy- Extracorporeal shock wave lithotripsy uses sound waves to break up large stones so they can more easily pass down the ureters into your bladder. This procedure can be uncomfortable and may require light anesthesia. It can cause bruising on the abdomen and back and bleeding around the kidney and nearby organs.

Kidney Stone

Mechanism of Action of Allopurinol in Management of Uric Acid Stone



Kidney Stone

Home remedy for prevention and treatment of kidney stone

Remedy	Explanation
Water	This will help to keep your body hydrated and to flush out minerals and toxins that cause the formation of stones. More fluids make it easier for the stones to pass
Onion decoction	Onions have antioxidant properties which prevent crystallization and further growth of kidney stones. This decoction can be made by boiling 2 to 3 small onions in a glass of water for about 15 minutes. Drain, add sugar and drink thrice a day for good results.
Lemon juice With olive oil	This recipe claims to help break down smaller kidney stones and flush them out. The citric acid in the lemon juice is known to help dissolve the stones while the olive oil acts as a lubricant
Coconut water	Apart from being a health drink, coconut water can be consumed to treat kidney stones. It has shown good results in breaking and flushing out the kidney stones from the body and to relieve burning sensation during urination.

Kidney Stone

Home remedy for prevention and treatment of kidney stone

Remedy	Explanation
Red Apple	Apples are prone to oxidation and in turn very effective in the dissolution of kidney stones . Crush and extract juice from red apples. Drink it fresh without any added ingredients to help prevent formation of stones
Apple Cider Vinegar	This is known to be a remedy for many medical conditions including kidney stones. It is suggested that taking 2 tablespoons of Apple Cider Vinegar can prevent formation of kidney stones.
Kidney Beans	Kidney beans have been aggressively advocated for the treatment of kidney stones. Magnesium is known to alleviate symptoms in kidney stones and also to prevent recurrence. Kidney beans being a good source of magnesium are highly recommended as a home remedy
Pomegranate	Seeds and the juice of pomegranate are considered effective remedies for kidney stones. Studies have shown that pomegranate juice may prevent the formation of kidney stones. Pomegranate is full of antioxidants

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