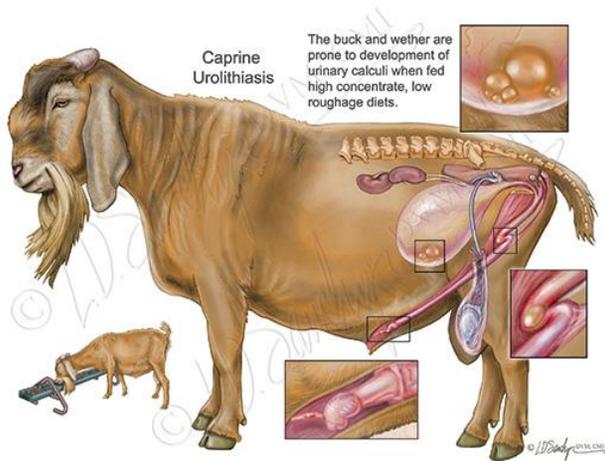


The Male Urinary System

Female goats can develop urinary stones, but they don't usually cause an issue. Males are different, however, as can be seen in this image of their complex urinary tract.



Symptoms of Urinary Calculi

- Straining to pee
- Pee a 'sprinkling' rather than a stream
- Signs of discomfort
 - Crying, standing up and laying down, etc.
- Puddle of liquid trapped under the skin on the goat's belly
 - This means the uretra has burst and there is no saving the goat.

You don't want to have the problem ever get to this point. If your goat exhibits these symptoms, call a vet.

Resources

<http://www.tennessee meat goats.com/articles2/urinarycalculi06.html>

<http://hoeggerfarmyard.com/urinary-calculi-in-goats/>

Preventing Urinary Calculi



In memory of Samwise

Urinary calculi (urinary stones) are crystals that form in a goat's bladder due to an overabundance of either calcium or phosphorus. Females can have urinary stones, but it is in male urinary system where the stones can cause problems.

This is a problem that is better prevented than treated as it is often fatal.



Phosphorus Sources

- Grass
- Most hay
- Forage
- Black Oil Sunflower Seeds
- Corn

Calcium Sources

- Alfalfa
- Calcium carbonate

Check the tag on the grain you want to feed. If the minimum percentage of calcium is not twice as much as the maximum percentage of phosphorus you will need to add a calcium source.

Grass and browse are most often phosphorus sources. A goat subsisting on just these will likely still require some alfalfa in his diet.



(It was once thought that protein caused urinary stones. It is now known that this is not true, however some may still insist that alfalfa hay (a protein source) is the cause of urinary stones.)

The Cause of Urinary Stones

Grain does not cause urinary stones, nor does hay, or grass, or any other one particular thing a goat eats. Urinary stones, in the end, are a chemistry equation - they are the result of an imbalance of two elements: calcium and phosphorus.

A male goat's diet must have a **MINIMUM** ratio of 2:1 calcium to phosphorus, with some recommending that ratio be up to 4:1.

This ratio must be maintained. This is the only way urinary stones can be 100% prevented.

Most urinary stones are caused by an overabundance of phosphorus, although calcium based stones are possible. Grain is usually heavy in phosphorus, which gives the impression that grain causes urinary stones. In many cases grain is the source of the phosphorus imbalance, but there are still cases of urinary stones in animals that have never eaten grain.

When figuring out what feeding system works best for your boys, be sure to maintain the minimum ratio of calcium to phosphorus and urinary stones should never form.

I feed my boys a 1:1 mix of Purina Goat Chow and alfalfa pellets.

Additional Preventatives

There is no 'magical' cure for urinary stones.

These additional preventatives will **NOT** stop urinary stones from forming. The minimum ratio of Ca and P must always be maintained. These methods do become effective, however, if stones have already begun to form.

Urinary stones, both phosphorus and calcium based, are not soluble in water-based solutions like urine. They **MAY** become soluble, however, if the solution becomes acidic.

The goal of these additional preventatives is to make the goat's urine more acidic.

- Add a splash (1 to 2 tablespoons) of apple cider vinegar to the boys' water.
- Sprinkle a little ammonium chloride on the boys' feed or minerals occasionally.