Urinary Calculi in Goats

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Urinary Calculi in Goats

What is it?

• Urinary calculi, or Urolithiasis, water belly, and stones
• Urinary calculi is a common metabolic disease of male goats.
• The disease occurs when the calculi “stones” usually comprised of phosphate salts, lodge in the urinary tract and prevent normal urination.
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What is it?

- When goats are fed forage based diets, phosphorus is recycled through the saliva and excreted via feces.

- High grain-low roughage diets decrease the formation of saliva and increase the amount of phosphorus in urine.
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What is it?

• The primary causes of urinary calculi is feeding concentrate diets which are excessive in phosphorus and magnesium

• These feeds have an imbalance in Ca:P ratio

• Lack of water

• Water source is high in minerals
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Who is at risk?

Wethers are most at risk.

Occurrence

- Urinary calculi occur in intact males
- Castrates are most venerable
  - Castration of your males removes hormonal influence (testosterone) necessary for penis and urethra to development to full size.
- Goats banding from day 1-30 are most at risk.
- Calculi form in females but are excreted (flush out readily)
- Genetic predisposition
- What is your reason for castrating?
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What are the symptoms?

- Increased vocalization and tail twitching
- Loss of appetite with restlessness and anxiety
- Abdominal pain, urine dribbling, distention and rupture of the urethra
- May have humped-up appearance and belly edema
- Kicking at the belly and straining to urinate
- Dribbling, bloody urine
- Death when bladder bursts and urine fills the peritoneal cavity and urine is absorbed into the bloodstream
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How do you treat it?

• Treatment depends on location of the obstruction.
• Simple case:
  – Snip off the urethral process to allow calculi at end of penis to dislodge.
• Complex case:
  – Tranquilizers may help relax the muscles of the urethra causing calculi to expel
  – Pass a catheter in to the urethra to infuse with sterile saline solution
  – Surgical intervention may be necessary to save valuable animals.
  – Consult with your veterinarian
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How do you Prevent It?

• It is better to prevent urinary calculi than to treat.

• **Top of the list: do not feed a high percentage of the daily ration as a grain concentrates**

• Feed rations which contain a calcium to phosphorus ratio of at least 2:1 (up to 4:1) and never below 1:1

• High calcium diets are effective at reducing the absorption of phosphorus from the GI tract.
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How do you Prevent It?

• Nether magnesium or phosphorus should be added to the concentrate diets.

• Diets should contain adequate amounts of vitamins (A, C)

• Once the ration is balance don’t add to it, dilute with corn, horse feed.
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How do you Prevent It?

• Calcium Sources:

• Addition of calcium is well tolerated:
  – Calcium carbonate (not dicalcium phosphate)
  – Legume hays are excellent sources: alfalfa, clover, lespedeza
  – Soybean hulls as a fiber and energy source (2:1, Ca:P ratio)

• Roughage will increase salivation and ruminination resulting in greater phosphorus excreted in the urine.
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How do you Prevent It?

- Excessive Phosphorus:
- Cereal grains, corn, barley, wheat
- By-product feeds, distillers dried grains with solubles, corn gluten pellets
- All contain a low Ca:P ratio 1:4-1:6
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How do you Prevent It?

• Water intake:
  • Adequate water intake is necessary to prevent urinary calculi

• Inadequate water intakes causes the urine to be more concentrated

• Adding 4% salt to the ration will help increase water intake
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How do you Prevent It?

• Feed additives for reducing urine pH
• 10 g ammonium chloride/hd/day or
  – 20% of the concentrate ration or
  – 40 lbs/ton of concentrate
• Ammonium sulfate at 0.6%-0.7% of the total ration
  – 100 lb goat 15g/hd/day
• Bio-Chlor feed 4 oz/hd/day
Conclusions

• Urinary calculi is a metabolic disorder of male goats and is caused by feed excessive amounts of phosphorus rich grains or by-product feeds

• The total ration should be balanced and should not exceed a calcium phosphorus ration of 2:1

• Roughages should be an integral part of all rations

• Use feed additives to reduce urine pH