Adobe Veterinary Center
Preventing Urolithiasis in Ruminants

Increased Water - We cannot impress enough the importance of increased water consumption in ruminants at risk for urolithiasis. It is crucial that a reliable source of water be readily accessible for ruminants on salt-supplemented diets. Canadian research determined that the dissolved mineral content, or hardness, of water is unlikely to play a significant role in bovine urolithiasis. Water containers should be cleaned and filled with fresh water on a regular basis. If automatic waterers are used, stagnation of water can be limited by using shallow tubs with spigots adjusted for rapid refill. Provision of shade over the water in the summer and heating the water during cold weather makes the water more attractive. For large groups of animals, provision of multiple watering sites allows for more frequent water intake. Finally, flavoring the water with sugar-free drink mixes has resulted in increased water intake in some pets.

Salt - The salt content of the diet should be gradually increased to promote water intake and formation of large volumes of dilute urine. Loose or lick salt provided free choice is inadequate for prevention of urolithiasis. Thus, mixing the salt directly into the feed is the most effective means of delivery. Salt can be mixed in moistened feed or treats (e.g. corn chips with additional salt applied) or sprayed as a saturated solution directly onto hay. As a target quantity, sodium chloride should be gradually added to the diet to a final level of 3-5% of daily dry matter intake. For an animal weighing 100 kg and ingesting 2% of its bodyweight in dry matter per day, this would translate to feeding 60-100 grams of sodium chloride daily.

Ammonium chloride – This can be fed at a level of 0.5-1% of dry matter in the diet. At this level, ammonium chloride may induce modest reduction in urine pH (acidification), which may increase the solubility of magnesium ammonium phosphate (struvite), calcium carbonate, calcium phosphate, and silicate in the urine. This salt is unpalatable. For pet animals fed on an individual basis, molasses should be avoided as a flavoring additive for salted rations, as its high potassium content may diminish the acidifying effect of ammonium chloride. Table sugar works well for covering up the flavor of ammonium chloride. Another way to calculate it is 50mg/kg twice daily. We can help you calculate the correct dose and help you find a good source of ammonium chloride.

Feeding frequency – Feeding the animals 1-2 times a day with nothing to eat during the other times increases urine pH to dangerous levels. In most cases, we recommend that free-choice hay be available to them all day.

Feed Plan - Grains and pellets may increase stone formation as there is a lot less ruminant saliva produced than when hay is fed. This saliva production may decrease stone formation in a couple of ways. Alfalfa and other legume hays contain far more calcium than a mature male or castrated male small ruminant needs for maintenance. As a result, urine calcium excretion can increase to the point of precipitation of calcium-based crystals. Adult male / castrated male small ruminants should be fed some type of grass hay as their primary forage source. Grass hay contains far less calcium than legume hay.

Age of Castration - Castration after 3-5 months of age may allow the urethra to reach a greater diameter, decreasing obstruction during their adult years.