NUTRITION NOTES
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AMMONIUM CHLORIDE IN LACTATING SMALL RUMINANT DIETS

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With the launch of the expanded Home Fresh® product line, we took the opportunity to reevaluate the products and formulations of Kent Nutrition Group's (KNG) small ruminant feeds. As a result, improvements in formulation were made to improve the nutritional quality of feeds and the resultant health of the animals being provided these feeds. This article will address the concern regarding the inclusion of ammonium chloride (AC) in Home Fresh® 20 Dairy Goat.

Ammonium chloride is simply a salt of ammonium (NH4) and a chlorine (Cl) ions. This results in AC being readily soluble in aqueous environments, including the rumen. Rapid dissociation occurs upon entry into the rumen liquor resulting in NH4+ and Cl- ions. Free ammonia ions behave as non-protein nitrogen, and are utilized to create microbial protein, or conversion to urea and recycled or excreted according to needs. In this way, AC reacts similarly to excess feed protein which undergoes deamination and follows the same pathways.

The benefits from AC supplementation stem from the Cl- ions. Proper formulation of small ruminant diets must consider dietary cation anion difference (DCAD). The DCAD simplifies the dietary fixed ion balance: sodium (Na) + potassium (K) - chlorine (Cl). Diets commonly have a +25 DCAD. This is ideal for many classes of livestock, but manipulation can provide positive health benefits.

Small ruminants, particularly male classes (bucks, wethers) are at risk for urinary calculi when calcium (Ca) and phosphorous ratios are out of proportion. This is particularly of concern when feeding grains. The inclusion of AC in diets of small ruminants can be used as a key preventative method for urinary calculi. The Cl- aids in mild acidification of the urine. In turn, the macro-minerals are more readily solubilized and less likely to crystalize.

Does can also benefit from the addition of AC into their diets. Freshening does are at risk for hypocalcemia. Milk fever is the rapid decrease of blood Ca levels that results in paralysis and death often seen at the onset of lactation. Numerous studies have reported that the key prevention of milk fever relies not on dietary Ca, but rather on preparing the body to rapidly mobilize Ca reserves.

Decreasing the DCAD of lactating does may aid in Ca balance. Fredeen et al. (1988) reported that decreasing DCAD resulting in a 13 percentage point increase in absorbed dietary Ca, and a > 4 gram increase in Ca balance compared to a DCAD neutral control diet. The added AC within the low DCAD diet may be responsible for greater solubility and absorption of Ca, both within the intestinal lumen and the bloodstream.

Home Fresh 20 Dairy Goat has been formulated with optimal inclusion of AC to aid in urinary tract health and Ca homeostasis with careful consideration to implications of over-feeding AC. Home Fresh goat feeds are formulated to provide levels of AC below which have been reported to impair intake or cause bone resorption. Home Fresh 20 Dairy Goat is ideal for your herd, providing optimal nutrition and beneficial feed additives for doe, buck, and kid alike.

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