Mun and goats DRAFT

Milk Urea Nitrogen (MUN) in dairy goats: Are we feeding to much protein?

Traditionally dairy goat owners have encouraged to use feeds with high protein (about 16%) as well has high quality forage (Hedrich, 2008) frequently alfalfa. Yet some publications caution about having high protein levels can lead to high Milk Urea Nitrogen (MUN, in older literature may be called Milk Urea Level, MUL) levels that in cows are known to lower production (e.g., PennStateExtension, 2016). If high levels of ammonia are produced, if will be converted to urea and lost from the animal and is directly related to the amount of protein in the diet. So MUN levels can monitor protein status and can be manipulated to improve efficiency of microbial protein synthesis in the rumen and reduce levels of Nitrogen excreted into the environment. Optimal levels in cows are between 8 to 14, but these levels can vary daily, monthly, and seasonally (PennStateExtension, 2016).

Relatively little research has investigated normal and optional levels of MUN in dairy goats (Smith & Sherman, 2009; Goegtsch, 2019). Because of this, there are conflicting suggestions on optimal MUN levels. Most studies have looked at surveys of MUN in goat herds and there has been little experimentation (e.g., Anon, 2013, Rapetti, 2014). Rapetti found MUN levels to range from 11.9 to 64 (mean 34). Table 1, summarized the recommendations with the most recent on top.

Table 1. Recommendation of MUN levels in Goats.

Reference	Acceptable level	Too low	Too high	
Rappelli et al., 2014	22.9			Model based on correlations
Delaney, 2012; Hedrich, 2008	16-24	12-15	> 25	
Brun-Belut et al., 1991	28-32			Model based on correlations

Our interest in MUN levels occurred when we used [Langson] feed calculator and consistently had higher levels of protein [types] than necessary. For example, for a typical goat in our Lamancha herd (Table 2) had excessive levels of TDN and CP. Since we feed measured amounts of alfalfa and timothy as pellets (instead of free choice alfalfa), in addition to free choice Orchard/Timothy hay, we could change some of these variables. Stanlee (Stanlee, 2021) provide Crude Protein levels for their feeds with Alfalfa at 16%, Alfalfa-Timothy mix 12%, and Timothy at 8%.

Methods: A herd of 18 Lamancha or Experiments (Lamancha-Nubian crosses, 50% or more Lamancha). At twice a day milking, minimum of 0.25 lb of Purina Dairy parlor per pound of milk (rounded up), plus minimum of 1 lab of alfalfa, or alfalfa/timothy mix. MUN sampling of each goat taken at ……..

Feed Class	Feed Ingredient	Amount (lbs, as fed)	Amount (lbs, DM)	TDN supplied (lbs, DM)	CP supplied (lbs, DM)	TDN (%)	CP (%)	Ca supplied (g, DM)	P supplied (g, DM)
Concentrate	Dairy feed,16%	2	1.8	1.33	0.29	74	16	6.46	7.03
Forage	Alfalfa cubes	1	0.91	0.52	0.16	57	18	5.37	0.95
Forage	Orchardgrass hay	4	3.52	2.08	0.35	59	10	5.11	4.79
Forage	Timothy hay,full bloom	1	0.88	0.5	0.07	57	8	1.72	0.8
Running total		8	7.11	4.43	0.87			18.66	13.57
Requirements			3.9	2.46	0.33			5.44	3.8

Results.
Our statistical analyses of the preliminary study suggests that average levels above the recommended levels had slightly lower production of milk than those below the cut-off.

References

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