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W. Z. Yang
Agriculture and Agri-Food Canada, Canada

B. N. Ametaj
University of Alberta, Canada

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Use of by-products derived from Neem tree (*Azadirachta indica*) in livestock production

W.-Z. Yang¹ and B. N. Ametaj²

¹Research Centre, Agriculture and Agri-Food Canada, Lethbridge, Alberta, T1J 4B1 Canada, E-mail: yangw@agr.gc.ca, ²Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, Alberta, T6G 2P5 Canada

Key words neem oil fermentation feedlot diet in vitro continuous culture

Introduction Neem (*Azadirachta indica*) has been accepted as a valuable resource because of its diverse utility. Various parts of neem tree have been used as traditional Ayurvedic medicine in India (Brahmachari, 2004). Neem cake was reported to stimulate enzymes related to fibre degradation in which animals ??? (Agrawal et al., 1991). The objective of this study was to examine the effects of neem oil supplementation in a feedlot finishing diet on in vitro ruminal fermentation and digestibility.

Materials and methods A six-unit dual effluent continuous culture system was used. Diets consisted of 84% barley grain, 9% barley silage and 7% supplement (what type of supplement ??) (DM basis). Fermenters were provided 60 g/d of diet DM in two equal portions. The study was designed as a replicated 3×3 Latin squares with treatments: control (0 mg/l), low (400 mg/l) and high (800 mg/l) level of neem oil.

Results and discussion Total VFA concentration and proportion of acetate tended to reduce with increasing supplementation of neem oil (Table 1). Ruminal digestibilities of OM, NDF and starch as well as degradability of N decreased in relation to the amount of neem oil added. Supplementing 400 mg/L of neem oil increased microbial N synthesis by 25% with no further increase with the addition of 800 mg/L of neem oil.

Table 1 Effect of neem oil on volatile fatty acid (VFA) concentration and digestibility.

	Treatment, mg/L			SE	Effects	
	0	400	800		Linear	Quadratic
Total VFA, mM	84.3	83.6	78.5	3.0	0.10	NS
Acetate, % of total	45.1	43.7	40.0	2.2	0.09	NS
Propionate, % of total	43.6	44.2	46.6	3.2	NS	NS
Digestibility, %						
OM (true)	79.2	75.8	70.2	1.4	0.01	NS
NDF	65.0	63.9	55.7	1.7	0.01	NS
Starch	89.0	85.2	82.2	1.4	0.01	NS
N, (true)	78.0	77.5	66.9	2.5	0.01	0.10
Microbial N, g/day	0.93	1.15	1.05	0.06	0.09	0.02

Conclusions The reduction in the ruminal digestibility of OM due to neem oil supplementation is attributed to depression of digestibilities of fibre and starch as well as to the decrease in the degradability of CP. It suggests that supplementation with neem oil inhibited ruminal microbial activity. A linear reduction in ruminal digestibility of starch with supplementation of neem oil could be beneficial in preventing development of acidosis in feedlot cattle under high-grain diets.

References

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