



Crude protein effective degradability of some protein sources on bovines with daily dosages of monensin or propolis (LLOS)*

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INTRODUCTION

MONENSIN

Decreases protein fermentation in the rumen, and increases protein availability in the small intestine, resulting on beneficial effects for high performance ruminants.



It has been prohibited in some countries!

Inhibited bacteria classified as gram + (Park et al., 1998).

PROPOLIS

It may be a natural product that alters ruminal fermentation as monensin.

Objectives

To evaluate crude protein ruminal degradability of fish meal, corn gluten meal, and cottonseed meal with administration of monensin or hydroalcoholic extract of propolis in the rumen of bovines.

MATERIAL AND METHODS

3 castrated Hostein steers with ruminal Cannula Average body weight of 400 kg.



Total mixed ration: 50% of corn silage, and 50% of concentrate (ground corn grain, soybean meal, and mineral)

Feeding: 8:00 and 16:00 h

Treatments: Control (CON – with no additives); Monensin (MON – with ruminal administration of monensin); Propolis (PROP – with ruminal administration of hydroalcoholic extract of propolis). (PI No. 0605768-3)*

Ruminal administration of additives: twice daily (1 g at feeding time).

Ruminal degradability: nylon bag technique.

Feeds: fish meal, corn gluten meal, and cottonseed meal (6 g).

Incubation times: 0 (before feeding), 3, 6, 12, 24, 48, 72 h (after feeding).



6 g of each sample



After removal: bags was washed by hand (tap water), and 5 times of 1 min. at washing machine.

Dry process: bags was dried in a forced dry oven at 55°C for 72 h.

Crude Protein analysis: according to AOAC (1990) by micro-Kjeldahl method.

Potencial degradability (PD) of crude protein was calculated by:
 $PD = a + b(1 - e^{-ct})$ (Mehrez and Orskov, 1977)

Effective degradability (ED) of crude protein was calculated by:
 $ED = a + (bc/c + k)$ (Orskov and McDonald, 1979)

Data was analyzed by SAS, and means were compared by Tukey test ($P < 0.05$).

RESULTS AND DISCUSSION

Table 1- Crude protein (CP) ruminal degradability parameters of fish meal, corn gluten meal, and cottonseed meal in bovines fed diets with monensin or propolis

Feeds	Parameters (% of CP)	Treatment ¹				P
		TES	MON	PRO	SE	
Fish Meal	a	20.26	21.26	20.79	0.08	0.09
	b	26.46	27.29	29.42	1.49	0.18
	c	0.45	0.19	0.15	0.005	0.06
	PD%	46.72	48.55	50.21		
	ED (5%/h)	43.92	42.34	42.32	2.69	0.52
Corn Gluten Meal	a	15.10	14.68	16.39	3.02	0.56
	b	73.45	83.50	83.27	32.43	0.25
	c	0.06	0.03	0.03	0.00008	0.08
	PD%	88.55	98.18	99.66		
	ED (5%/h)	52.81 a	47.62 b	48.53 b	1.33	0.05
Cottonseed Meal	a	31.23	29.34	23.23	6.43	0.63
	b	63.48	65.85	68.22	12.43	0.42
	c	0.06	0.07	0.07	0.0005	0.66
	PD%	94.70	95.19	97.45		
	ED (5%/h)	63.23 b	67.41 a	64.08 b	0.34	0.02

¹TES: diet with no additive; MON: diet with ruminal administration of monensin; PRO: diet with ruminal administration of hydroalcoholic extract of propolis. SE: standard error; P: P-value; a: soluble fraction; b: insoluble but potentially degradable fraction; c: degradation rate of "b" fraction; PD: potencial degradability; ED: efetive degradability. Average in the same line, followed by different letters are different by Tukey test ($P < 0.05$).

CONCLUSION

Additives action on crude protein ruminal degradability was variable, according to protein source. Propolis showed similar action as monensin, it can be an alternative source to replace monensin. More research is required for better understand the action of propolis on ruminal fermentation of bovine.

