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Relation between *in sacco* rumen degradable protein and *in vivo* digestible protein of different diets in three animal species

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The digestible protein content, introduced in particular equations, could be a mean to know the rumen degradable protein (RDP), of which *in sacco* determination often involves many difficulties.

The *in vivo* protein digestibility (by faecal collection) and *in sacco* rumen protein degradability (by nylon bag technique) of two diets were carried out at the same time on 8 buffaloes, 8 cattle and 8 sheep, fistulated with a ruminal cannula, to determine the effective degradability (DT %).

The two diets, A and B, with the same protein content (14 % DM), had a forage : concentrate ratio of 87.5 : 12.5 and 50 : 50 respectively. Forages were alfalfa hay (2nd cut) and maize silage at the rate of 65 % and 35 % respectively. Diets were given two times per day (in the morning and in the afternoon) at the rate of 50 g of dry matter for metabolic weight. Comparisons, by regression equations, were carried out between the average daily ingested digestible protein (X) and the average daily ingested degradable protein (Y).

The results of regression equations are reported in the table. Average daily ingested digestible protein was always higher than average daily ingested degradable protein. The regression equations showed a high determination coefficient (R^2) in the three species (the highest ones were recorded in sheep and cattle). All the equations had a high significance.

The regression equations, obtained comparing all data relatively to the three species, gave a coefficient of determination very high (R^2 = 0.98) and good significance. The SDR values, referred to means of ingested protein showed a low variability.

As far as the results are concerned, it can be assumed that the RDP could be calculated by the digestible protein, determined *in vivo,* avoiding the use of nylon bag technique.

This first results, if confirmed by further experiments, could simplify, in the future, the *in sacco* degradable protein determination replacing, possibly, it with easier routine analysis as *in vitro* digestibility.

Diet	n	X	Y	a	b	SDR	R^2	F
	Buffaloes							
A	8	454 ± 36	430 ± 32	50.01	0.837	12.21	0.88	43.6
B	8	465 ± 65	443 ± 36	94.83	0.794	13.22	0.88	46.0
A + B	16	460 ± 40	436 ± 34	72.58	0.792	12.16	0.88	102.1
	Cattle							
A	8	532 ± 38	435 ± 36	-18.60	0.853	17.75	0.80	16.4
B	8	597 ± 48	514 ± 42	6.20	0.850	11.79	0.94	48.9
A + B	16	561 ± 53	470 ± 55	-89.28	0.997	16.79	0.92	99.3
	Sheep							
A	8	114 ± 22	98 ± 18	7.05	0.804	3.86	0.96	83.3
B	8	127 ± 16	108 ± 14	5.66	0.812	5.33	0.88	35.7
A + B	16	121 ± 18	104 ± 16	6.85	0.804	4.32	0.93	136.1
	Three species							
A + B	48	384 ± 186	343 ± 166	5.37	0.881	26.84	0.98	1424.9

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