



The Determination of Metabolizable Protein of treated and untreated canola meal



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Introduction

- There is little information available on the nutritive value of treated and untreated canola meal in ruminant nutrition.
- Since canola meal protein than other protein supplements are rapidly broken down in the rumen so the processing of canola meal to increase protein in the rumen through the rumen and reducing biodegradable sector in recent years, attention has been.
- The aim of this study was to determination of MP, ERDP and ED of treated and untreated canola meal using in sacco degradation trial.

Material and methods

- Treatments were: A) Canola meal, B) Canola meal treated with 0.5% urea, C) Canola meal treated with microwave.
- The chemical composition of dried treated and untreated canola meal was determined using the methods recommended by AOAC (1999).
- Rumen degradation characteristics of feeds (Ørskov et al, 1980) were calculated after the incubation of 5 g sample of treated or untreated canola meal (ground at 2 mm) in nylon bags.
- Bags were incubated in the rumen of 3 cannulated sheep for 0, 2, 4, 6, 8, 12, 16, 24, 36, 48, 72, and 96 h.
- The percentage of degradability (Y) of DM and N at time (t) was obtained from an exponential curve of the type: $Y = a + b(1 - e^{-ct})$, which was fitted to the experimental data by iterative regression analysis (Ørskov and McDonald, 1979).
- The effective degradability content calculated using equation ED (g/kg DM) = $a + bc/(c + k)$, where k refers to the fractional outflow rate of small particles from the rumen.

Results

- The chemical composition of treated and untreated canola meal are presented in Table 1.
- The parameters estimated from the metabolizable protein of treated and untreated canola meal are shown in Table 2.
- ERDP represents the total amount of nitrogen in the rumen of rumen microorganisms for their growth and consumption. The level of feed intake increased, the amount of ERDP to speed passage rate the rumen is reduced.
- Urea into the rumen by bacterial urease rapidly hydrolyzed to ammonia and thus can significantly increase the rumen ammonia concentration.
- Reduction of protein degradation in the microwave to the processing of short waves in the inner structures of the meal and create a uniform temperature rise and the movement of molecules is associated with bipolar.
- The canola meal treated urea had high MP compared to others. It is concluded that the processing of canola meal with urea caused high MP, whereas processing by microwave had no effect in MP of canola meal.
- **Acknowledgement** This study was carried out at Azad University of Maragheh, Maragheh, Iran.

Table 1 The chemical composition of treated and untreated canola meal (g/kg DM)

Treatments	DM	CP	NDF	ADF	ADIN	OM	CF	ASH
A	92.12 ^c	36 ^c	23.36 ^a	16.8 ^a	0.484 ^a	92.9 ^a	6.46 ^a	7.1 ^b
B	94.74 ^b	43.57 ^a	21.7 ^b	16.2 ^a	0.531 ^a	91.8 ^a	3.85 ^b	8.2 ^a
C	96.34 ^a	38.15 ^b	23.4 ^a	16.37 ^a	0.503 ^a	92.5 ^{ab}	5.98 ^a	7.5 ^b
SEM	0.166	0.219	0.449	0.19	0.163	0.316	0.179	0.155

^{a,b} Within a column, means without a common superscript letter differ ($P < 0.05$).

Table 2 The parameters estimated from the metabolizable protein and coefficients of crude protein degradation of treated and untreated canola meal

Treatments	a	b	c	ED	SDP	QDP	ERDP	DUP	MP
A	4.743 ^b	31.05 ^b	0.051 ^b	36.567 ^c	114.690 ^a	17.076 ^c	128.342 ^c	200.968 ^b	283.11 ^b
B	15.813 ^a	39.62 ^{ab}	0.0612 ^a	47.7 ^b	122.598 ^a	68.899 ^a	177.717 ^a	215.594 ^a	329.33 ^a
C	15 ^a	65.55 ^a	0.02 ^c	54.6 ^a	124.806 ^a	57.225 ^b	170.586 ^b	175.207 ^c	284.39 ^b
SEM	0.747	7.882	0.37	0.93	3.033	3.205	0.6426	0.3757	0.5076

a: Gas production potential of the solution, b: Gas production potential of the insoluble, c: Constant rate of gas production (per h).

^{a,b,c} Within a column, means without a common superscript letter differ ($P < 0.05$).