Effect of anaerobic enzyme matrix on the digestibility, rumen parameters, blood pictures and animal growth performance.

Gado [1],H., and Borhami[2], B.E.
[1] Animal production Dept., Fac. of Agric., Ain Shams Univ., Cairo, Egypt, (gado@link.net)
[2] Animal production Dept., Fac. of Agric., Alexandria univ., Egypt

1. Objective

evaluate the effect of exogenous enzymes (ZADO ®) on digestion and growth performance in lambs.

2. Introduction

Supplementing ruminant diets with fiber degrading enzymes can improve feed utilization and animal performance by enhance microbial colonization of feed by increasing numbers of ruminal fibrolytic microbes to increase rate of degradation of fiber in the rumen, rumen microbial protein synthesis and forestomach digestibility.

3. Material and methods

One hundred ossimi lambs with initial body weight of 18.4 kg+0.12 were randomly divided into two groups of 50 animal each (control and Zado). The exprimental animal were fed the Basal diet (table 1) with or without 5g/animal/d of ZADO® (it contains 2.32 U/g Xylanase, 61.5 U/g α-Amylase, 7.05 U/g cellulase and 29.2 U/g protease) .

Table (1) Ingredients of the lamb diets

Ingredients, g/kg	Control	+ ZADO®
Yellow corn grain	600	595
ZADO®	0	0.5
Soya bean meal	150	150
Berseem hay	150	150
Wheat bran	68	68
Ammonium chloride	5	5
Salt	5	5
Limestone	10	10
Mineral vitamin mixture[2]	3	3
Anti toxins	2	2
Buffer	7	7

4. Results

Table (2). Ruminal fermentation activities of the diets

ITEM	Control	+ ZADO®	SEM
Total volatile fatty acids, meq/dl			
0h	6.4	7.0	0.7
3h	7.5^{b}	9.1^{a}	0.3
6h	7.3^{b}	8.2^{a}	0.3
Ammonia N, mg/dl			
0h	16.0^{a}	15.5^{b}	0.2
3h	19.9	21.9	0.4
6h	16.9	18.	0.7
Ruminal pH			
0h	7.2	7.5	0.4
3h	6.5^{b}	6.8^{a}	0.3
6h	7.0	7.2	0.5

4. Conclusions

Adding ZADO (exogenous enzyme)

- Improving feed intake increase nutrient digestion
- Improve rumen fermentation
- Increase animal growth
- Improve feed efficiency

Table (4) Growth performance of lambs fed diets.

	Control	+ZADO®	SEM
No. of lambs	50	50	---
Experimental period	90	90	
Initial live-weight, kg	18.3	18.5	0.25
Final live-weight, kg	32.8^{c}	38.9^{a}	5.05
Live-weight gain, kg/d	0.24^{c}	0.34^{a}	0.062
DMI,kg/head/day	1.23	1.72	
Net profit, US $/head/day	0.97	1.38	
Cost in US $ of ZADO/head/day	0	0.002	
Feed efficiency, kg DM/kg live weight gain	5.1	5.06	0.07

Table (4) Blood metabolites of lambs fed diets

	Control	+ ZADO®	SEM
Protein, g/100ml	7.1	7.2	0.3
Globulin g/100 ml	50.3^{b}	58.4^{a}	2.6
Albumin, g/100 ml	3.2	3.4	0.4
Cholesterol, mg/100ml	105.0^{a}	98.2^{b}	9.1
Urea, mg/100 ml	31.3	33.1	6.9
GPT, units/ml	41.5	42.0	7.7
GOT, units/ml	22.9	23.0	2.8

Table (3) Intake (g DM/day) and total tract apparent digestibility (g/day) of lamb fed diets[1]

	Control	+ ZADO	SEM
DM	65.0	68.9	1.3
OM	67.2	70.1	0.9
CP	79.1	83.1	1.8
EE	60.8	66.7	0.8
NDFom	49.3	57.3	0.7
ADFom	41.2	45.3	0.8