

EFFECTS OF BARLEY PROCESSING ON THE BIO-PRODUCTIVE INDICES IN FATTENING WEANED LAMBS

EFECTUL PROCESĂRII ORZULUI ASUPRA INDICILOR BIOPRODUCTIVI LA TINERETUL OVIN SUPUS ÎNGRĂȘĂRII

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*The objective of our researches was to observe the nutritive and productive effect of the ratio, offered at discretion, composed of alfalfa hay and barley under the following presentation forms: whole grains, roughly ground (4mm) with and without addition of yeast, strain Yea-Sacc¹⁰²⁶, to lambs submitted for fattening. The experiment lasted 54 days, the biological material was represented by Turcana lambs, grouped in three lots (n=12). Growth performances were significant bigger ($p < 0.04$) for the final body weight, total weight gain and average daily gain, but the specific intake was decreased with 0.49 UNC in lambs that consumed ground barley prior to those that consumed whole barley grains. The addition of *Saccharomyces cerevisiae*, strain Yea-Sacc¹⁰²⁶ in the ground barley at 4 mm has a more productive and evident effect ($p < 0.02$) regarding final body weight, total weight and average daily weigh compared to the lambs fed with whole barley grains, with a specific intake lower with 0.89 UNC.*

Key words: lamb, fattening, nutrition, barley, yeast

Introduction

When fattening young lambs, the processing degree of different ration components may influence the nutrients available for animal body. For a better utilization of the forage consumed by young lambs, we may also intervene with the addition of probiotics in the concentrates mixture. The objective of our researches was to determine how does the barley ground in 4-mm particles, with and without addition of *Saccharomyces cerevisiae*, exert an effect upon growth indices in lambs submitted to fattening compared to a whole barley grain diet.

Materials and Methods

Our researches were performed at the Didactic Station Timisoara in Turcana weaned lambs, 98 day old, proceeded from simple births.

At the beginning of the experimental period, the lambs was randomly divided into three groups, each group was made of 12 lambs, according to the experiment organization program presented in table 1. The lambs groups were maintained in shelter, under the same environmental conditions.

- Group 1 (control) was feed at discretion with alfalfa hay and whole barley grains.
- Group 2 was feed with the same diet, but barley was grounded into 4 mm particles.
- Group 3 had the same feed ratio like group 2, but the grounded barley was added with *Saccharomyces cerevisiae*, strain Yea-Sacc¹⁰²⁶, in amount of 2 g/kg forage (2 ‰).

Table 1

Experiment organization program

Specification	Group 1	Group 2	Group 3
Fattening lamb at the age period of 98 – 152 days (n)	12	12	12
Nutritive factors	Alfalfa hay Whole barley grain	Alfalfa hay Ground barley at the size of 4mm	Alfalfa hay Ground barley at the size of 4mm + <i>Saccharomyces cerevisiae</i> , Yea-Sacc ¹⁰²⁶ 2 g/kg barley

Lamb groups were constituted, two weeks, before the experiment beginning. An accommodation period was necessary for lambs so that they could accustom to the new conditions of maintenance and feed.

The forage intake/group was registered daily using a scale with an accuracy of 0.1 kg. Body weight evolution was established through weighing each lamb at the age of 98 days (at the beginning of the experimental period) and at 152 days (at the end of the experimental period). The results achieved, biostatistically processed, were compared between them with the help of the “Mann Whitney” test.

Results and Discussions

During the entire period, we may notice (table 2) that lambs in group 1 consumed with 114.8 kg, respectively with 120.6 kg less hay and with 66.5 kg, respectively 50.6 kg less barley than the lambs in groups 2 and 3. The difference between variants 2 and 3 is only 5.8 kg for hay (a bigger intake in group 3) and 15.9 kg for barley (a bigger intake in group 2).

If we analyze the average values of intake/lamb/day, then we may observe that lambs in group 3 eat daily more hay with 186 g, respectively with 9 g compared to the lambs in groups 1 and 2. The biggest barley intake was observed in group 2 with a daily intake of 102 g, respectively 24 g more than the lambs in groups 1 and 3.

The barley processed through grinding at 4 mm particles, offered to group 2, leads to the decrease of the specific intake with 0.49 UNC/kg body weight compared to group 1. The addition of the yeast *Saccharomyces cerevisiae*, strain Yea-Sacc1026 in a proportion of 2 % in the barley ground at 4 mm leads to the achievement of a specific intake lower with 0.88 UNC, respectively with 0.39 UNC compared to group 1, respectively group 2. So, by grinding barley into 4 mm particles and by adding *Saccharomyces cerevisiae*, the conversion of the dry feed offered in groups 2 and 3 is higher, leading to the achievement of lower specific intakes.

Table 2

Nutritional index realized by fattening lambs in the experimental period

Specification	Group 1		Group 1		Group 1	
	Alfalfa hay	Whole barley grain	Alfalfa hay	Ground barley (4mm)	Alfalfa hay	Ground barley Yea-Sacc ¹⁰²⁶
Feed consumption /group/period (kg)	689.9	329.7	804.7	396,2	810,5	380,3
Average consumption /lamb/day (kg)	1.065	0.509	1.242	0,611	1,251	0,587
Specific consumption (UNC)	3.81	3.77	3.51	3,58	3,40	3,30
	7.58		7.09		6.70	

In the analysis of data presented in table 3, we may notice that there are not significant differences between group 1 and 2 ($p>0.05$) regarding initial body weight (21.80 kg, respectively 21.74 kg), but the differences are significant ($p<0.04$) regarding final body weight (30.85 kg, respectively 33.20 kg), total weight (9.05 kg, respectively 11.46 kg) and average daily weight (168 g, respectively 212 g).

The addition of the yeast *Saccharomyces cerevisiae* strain Yea-Sacc¹⁰²⁶ in the 4 mm- ground barley offered to group 3 exerts a more evident effect compared to group 1, fed with whole barley grains (table 4). So that the differences between the two variants mentioned above are insignificant ($p>0.05$) regarding initial body weight (21.63 kg, respectively 21.80 kg), but they are significant ($p<0.02$) regarding final body weight (33.53 kg, respectively 30.85 kg), total weight (11.91 kg, respectively 9.05 kg) and average daily weight (221 g, respectively 168 g). Conclusively, the bioproductive performances achieved are favorable for the lambs in the experimental groups 2 and 3 that consumed roughly ground barley and ground barley in mixture with *Saccharomyces cerevisiae* strain Yea-Sacc¹⁰²⁶.

Table 3

**Productive index realized by fattening lambs from group 1 and 2
in the experimental period**

Specification	Group 1 Whole barley grains			Group 2 Ground barley (4mm)			Differences L ₁ -L ₂	Mann- Whitney TEST
	n	$X \pm S\bar{x}$	cv%	n	$X \pm S\bar{x}$	cv%		
Initial body weight (kg)	12	21.80±0.64	10.16	12	21.74±0.57	9.05	0.06	0.95 ns
Final body weigh (kg)	12	30.85±0.75	8.44	12	33.20±0.78	8.11	-2.35*	0.04 s
Total weigh gain (kg)	12	9.05±0.16	5.95	12	11.46±0.23	7.07	-2.41*	0.00003 s
Average daily gain (g)	12	168±2.88	6.47	11	212±4.33	7.06	-44*	0.00003 s

Table 4

**Productive index realized by fattening lambs from group 1 and 3
in the experimental period**

Specification	Group 1 Whole barley grains			Group 3 Ground barley + Yea-Sacc ¹⁰²⁶			Differences L ₁ -L ₃	Mann- Whitney TEST
	n	$X \pm S\bar{x}$	cv%	n	$X \pm S\bar{x}$	cv%		
Initial body weight (kg)	12	21.80±0.64	10.16	12	21.63±0,58	2.01	0.17	0.77 ns
Final body weigh (kg)	12	30.85±0.75	8.44	12	33.53±0,78	2.71	- 2.68*	0.02 s
Total weigh gain (kg)	12	9.05±0.16	5.95	12	11.91±0,25	0.88	- 2.86*	0.00003 s
Average daily gain (g)	12	168±2.88	6.47	11	221±4,71	16.29	- 53*	0.00003 s

Conclusions

- In the lambs feed with 4 mm ground barley, the differences are significantly bigger ($p < 0.04$), with 2.41 kg, respectively 44 g for the total body weight and average daily weight, compared to the lambs feed with whole barley grains, and the specific intake is lower with 6.46%.

- In the lambs feed with 4 mm ground barley added with *Saccharomyces cerevisiae* strain Yea-Sacc¹⁰²⁶, the differences are significantly bigger ($p < 0.02$) with 2.86 kg, respectively 53 g regarding the total body weight and average daily weight, compared to the lambs feed with whole barley grains, and the specific intake is lower with 11.61%.

Bibliography

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