

## ASSESSMENT NUTRITIONAL VALUE AND EFFICIENCY FOR USE OF A NEW SOURCE OF VEGETABLE FODDER

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### Abstract

*Fodder sources for livestock sector diversification is always present a problem in Moldova. Viticulture industry in our country occupies an important place in agriculture and annually the result of processing of grapes obtained large quantities of such waste as: grape marc, peel grapes, wine lees and others. These wastes can serve as a very precious source of feed for farming animals. Currently, waste from processing of grapes is used in other fields - medicine, food industry. As a result of these processing products are obtained comparative new and less studied, such as cake or macuhul (cake) made of grape seeds, shell beans and others. The aim of our research was to studied nutritional value and the possibility use macuhului (cake) made of grape seed in nutrition of young cattle and appreciation the optimal level of inclusion of this product in the composition combined fodder. Macuhul (cake) made of grape seeds is a precious waste of processing industry can be successfully used in rations of farming animals because it contains a sufficient level of protein (10.5%), lipids (5.2), sugar (9.8%), macro-and microelements. Taking into consideration the productivity of animals, ingestion level of feeds, blood indices, we believe that the optimal level of inclusion of the macuhului (cake) made of grape seeds in the composition combined fodder for young cattle is 5 to 10%.*

**Key words:** diversification fodder sources, cake of grape, combined fodder.

### INTRODUCTION

The diversification of fodder sources Fodder for livestock sector is always actual problem in Moldova. Industry of viticulture in our country occupies an important place in agriculture and in results of processing of grapes annually obtained large quantities of such waste as: grape marc, peel grapes, wine lees and others. These wastes can serve as a very precious source of feed for farm animals because, for example, the nutritional value of 1kg of dry pomace is 0,5 to 0.6 A, 11-13% crude protein, 9-10% fat gross and 28-30% crude fiber. Of mineral substances in a kg of pomace contained: 9,7 g calcium, 2,5 g phosphorus, 250-300 mg iron, 0,15 to 0,17 mg cobalt, 19,3 to 21 mg copper, 39, 5 to 42,0 mg of manganese, 32,5 to 34,2 mg of zinc [4, 5, 6, 7]. At present the waste from grapes are used in other fields - medicine, food industry. As a

result of these processing are obtained new and less studied secondary products such as cake or macuhul (cake) from grape seed, peel beans and others [1].

The aim of our research was to study the nutritional value and the possibility to use the macuh (cake) from grape seed in nutrition of young cattle and appreciation the optimal level of inclusion of this product in the composition combined fodder.

### MATERIAL AND METHOD

The experiment was conducted according to the cattle breeding farm of the Scientific and Practical Institute by Biotechnology in Animal Husbandry and Veterinary Medicine on three lots of calves, each of 5 heads each age 4-6 months.

In the selection of animals for experience were taken into consideration the following indices: date of birth, body weight, sex, health status.

After these factors were fairly homogeneous groups, calves in the first group having the average age the 122,6 days in second group 125,5 and 123,4 days in the third group, body weight was, appropriately, 111,4; 110,4, and 110,6 kg.

Voluminous fodder (hay, silage) were distributed in the equal amounts in all groups, evidence of feed are made daily with weighing in the medium in groups. Particularities of nutrition is in fact the animals in group I (control) received in addition to the basic fodder ration after a standard recipe, in second group (experimental) combined fodder containing 5% macuh (cake) from grape seed, and in group III (experimental) this figure increased to 10%.

Evidence of Productivity was made by weighing individual calves - monthly. The blood biochemical and morphological indices were studied twice during the experience.

## RESULTS AND DISCUSSION

For carrying out of the experience was prepared the required amount of standard combined fodder include traditional ingredients for Moldova and vitamin-mineral premix "Bujorel".

The receipt of combined fodder differed between groups only after content of macuh (cake) from grape seeds (Table 1)

Table 1. Recipes combined feed for young cattle aged 4-6 months, with the inclusion of macuh (cake) from grape seeds, used in the experiment (%)

Ingredients	Combined fodder		
	no.1 control	no.2 experimental	no.3 experimental
Barley	58	53	48
Corn	5	5	5
Wheat	10	10	10
Peas	10	10	10
Macuh from sunflower	15	15	15
Macuh from grape seeds	-	5	10
Premix „Bujorel”	1	1	1
Kitchen salt	1	1	1

The difference between these recipes consists only in using in recipe No.2 of the 5% macuh (cake) from grape seeds and 10% in the recipe No 3. Also in the same proportion decreased content of barley, so in the combined experimental fodder barley No.2 and No.3 in

the proportion of 5:10% was replaced with macuh from grape seeds. This was opportune the contents and fairly high in protein, lipids and carbohydrates of the waste, extremely important nutrients during the growing young cattle (Table 2).

Table 2. The chemical composition of combined fodder and raw materials

Indices	Combined fodder			barley	macuh from grape seeds
	no. 1 0% ma-cuh from grape seeds	no. 2 5% ma-cuh from grape seeds	no. 3 10% ma-cuh from grape seeds		
Humidity, %	10,2	10,1	10,1	9,0	9,1
Lipids, %	4,5	4,54	4,7	2,34	5,2
Protein, %	12,6	13,0	13,5	9,6	10,5
Sugar, %	4,4	4,9	5,3	2,2	9,8
Starch, %	53,3	52,98	53,04	53,65	2,12
Crude ash, %	4,02	4,14	4,27	2,43	2,95
Crude fiber, %	5,41	6,83	7,53	5,38	26,5

Data of Table 2 shows that protein content increases from 12,6% in combined fodder witness to 13,0% in combined fodder No.2 and up to 13,5% in combined fodder No.3. The differences are caused by the fact that No. 2 and No.3 combined fodder the barley was replaced at a rate of 5 and 10% respectively with macuh (cake) from grape seed has a higher protein content – 10,5% compared to 9,6% in barley.

For the same reasons in combined experimental fodder sugar content increases (from 4,4 to 5,3%, crude fiber (from 5,4 to 7,53%) and crude ash (from 4,02 to 4,27 %).

Were used during the experimental rations identical in all groups, which included kg / head / day: combined fodder, 2,0, vetch hay + oat – 0,7-0,8, alfaalfa hay – 1,6 to 1,7, green alfaalfa mass + corn -2,7 to 2,9.

After rations nutrient content of all groups were balance and meet the requirements of the food standards of these animals.

One of the basic indices was studied during experimental animals was productivity (Fig. 1). The individual weighing of calves effectuate for three times during the of the experience

show a gradual increase in productivity in group I control from 560 g average daily gain in the first weighing up to 785,2 g in the second and third weighing 1076,9 g. In two experimental groups these indices were, corresponding: 550; 748,1 and 1230,8 g. Similar results were obtained in the third group – 590,0; 837,0; 1046,2 g

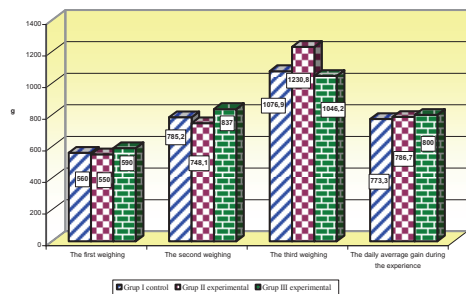


Fig.1. Dynamics of average daily gain, g

In medium in during the experimental control group was obtained the productivity to  $773,3 \pm 64,18$  g daily growth, II experimental  $786,7 \pm 42,25$  g and III experimental group –  $800,0 \pm 50,0$  g

So, no essential differences in animal productivity occurred between lots the indifferent recipes of combined feed used.

At the beginning and end were studied of the experience some blood indices of animals involved in the study (Table 3).

We mention that the results demonstrate good health of animals in all groups, because all indices studied were within physiological norms as both the beginning and the end of the experience.

Essential differences between the groups studied indexes were not detected, although it

may be noted a tendency to increase in the controls at the end of the experience so indicates that hematocrit 37.8% compared to 35 - 35.2% in experimental groups. Hemoglobin also has a higher index - 124.6 g / l in the control group from 115.2 to 116.9 in experimental groups.

After the albumin, calcium and phosphorus, essential differences between groups were not found, instead of glucose content was little higher - 3.9 to 4.0 mmol / l in experimental groups compared with 3.8 mmol / l in the controls.

## CONCLUSIONS

1. Macuh (cake) from grape seeds is a waste of precious processing of industry can be successfully used in rations of farm animal because it contains a sufficient level the protein (10.5%), lipids (5.2), sugar (9.8%), macro-and micronutrients.

2. Inclusion of macuh (cake) from grape seeds in composition of combined fodder in the amount of 5-10% has a negative impact on young cattle productivity. Average daily gain of experimental animals was 786.7 to 800.0 g compared to 773.3 g in the control group, 1.7 to 3.5% or more.

3. Study of blood biochemical indices at young cattle has not found a negative influence use of macuh (cake) grape premixtures on animal health status, data parameters situated in physiological norms for healthy animals.

4. Taking into account the productivity of animals, feed intake level, blood evidence, we believe that the best macuh (cake) include (cake) from grape seeds in composition of combined fodder for young cattle is 5 - 10%.

Table 3. The results of biochemical analysis of blood samples taken from young cattle

Group	Ht,%	Hb, g/l	Protein, total (g/L)	Albumin (g/L)	Calcium, mmol/L	Phosphorus, mmol/L	Glucose, mmol/L	AST (U/L)	ALT (U/L)
<b>STANDARD</b>	<b>35-45</b>	<b>90-120</b>	<b>61-82</b>	<b>27-39</b>	<b>2,1-3,8</b>	<b>1,4-2,5</b>	<b>2,3-4,1</b>	<b>43-127</b>	<b>6,9-35,3</b>
<b>At the beginning of the experiences</b>									
I	41,1	108,8	61,1	31,5	-	1,79	3,63	59,3	21,4
II	40,5	109,4	59,4	30,2	-	1,64	3,19	52,0	17,0
III	37,9	107,7	57,6	30,9	-	1,79	3,3	42,8	17,9
<b>At the end of the experiences</b>									
I	37,8	124,6	65,6	37,4	2,9	2,2	3,8	62,8	23,9
II	35,0	115,2	64,0	36,3	2,7	1,95	3,9	54,4	18,6
III	35,2	116,9	64,4	37,9	2,7	2,2	4,0	55,3	21,0

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