Quality Analysis of Raw Cow Milk from the Cojocna Farm, UASVM Cluj Napoca in Correlation with the Feeding Technique and Mammary Gland Health Status

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Abstract

Quality analysis of 576 milk samples, obtained from the eight controls was performed in 2015 at the didactics UASVM farm from Cojocna. The biological material was represented by a total of 107 cows of Romanian spotted breed. On this population, individual and overall, were analyzed more aspects: productive performances and the main milk quality indicators such as fat, protein, lactose, pH, with particular reference to somatic cell counts as the main indicator of subclinical mastitis and the content of urea as the main indicator of nutritional aspects of the dairy cows. Following the official control of milk production, it was found that the milk production was on average 14.76 kg/day with a values of coefficient of variability between 31.05% and 40.47%, depending on the controls. The chemical characteristics of 576 samples showed considerable variations from one control to another. The amount of total fat and protein was found to be on average of 3.92% and 3.37% respectively. Regarding the content of urea and somatic cells, in all tested milk samples, the lowest value were found in the fifth control, with an average of 8.04 ± 0.6 mg/dl (for urea) and 69.20 ± 23.3 cell/ml $\times 10^3$, while the highest were in the first control 19.37 ± 0.7 mg/dl for urea, and 263.17 ± 31.7 cell/ml $\times 10^3$ for the somatic cells.

Keywords: *Farm, Milk, Romanian spotted breed, Quality*

INTRODUCTION

Analysis of row milk samples at the farm level referring to the content of fat, protein and particularly de milk urea nitrogen and somatic cell, are useful tools for getting a general information of how well the cows are, their responding to a given rations and last but not least the mammary gland health status (Ogola *et al.*, 2007; Ishler, 2008; Biswajit *et al.*, 2011).

AIMS AND OBJECTIVES

The purpose of this study was to highlight the quality of raw milk, nutrition influence on milk

quality and the status of mammary gland health of Romanian spotted cows bred from didactics UASVM farm.

MATERIALS AND METHODS

The biological material was represented by 107 cows of Romanian spotted breed, which have been analyzed based on 576 milksamples, obtained form the eight controls performed monthly in the period May to December 2015. All milk samples were analyzed at the Foundation for Milk Quality Control from Cluj and were considered the following parameters: milk quantity, fat, protein,

Tab. 1. Milk composition, milk urea and somatic cell count

Traits	No. of samples	Milk quantity (kg)	Fat (g/100g)	Protein (g/100g)	Lactose (g/100g)	pH	Urea mg/dl	SCC/ml X 10 ³
Control 1	107	15.81±0.61	3.96±0.07	3.44±0.04	4.72±0.03	6.54	19.37±0.74	263.17±31.78
Control 2	100	13.80±0.48	3.81±0.06	3.38±0.03	4.81±0.02	6.54	15.31±0.54	249.47±30.27
Control 3	78	12.21±0.49	3.95±0.08	3.32±0.03	4.84±0.03	6.55	14.27±0.41	195.21±25.41
Control 4	72	12.90±0.62	3.79±0.10	3.20±0.04	4.75±0.03	6.56	9.93±0.44	180.81±23.67
Control 5	43	15.04±0.71	3.73±0.10	3.47±0.07	4.71±0.05	6.55	8.04±0.68	69.20±23.39
Control 6	44	16.34±0.93	3.63±0.11	3.34±0.06	4.76±0.04	6.58	8.43±0.61	119.34±34.89
Control 7	59	16.60±0.69	4.20±0.12	3.55±0.06	4.86±0.04	6.51	14.79±0.80	167.09±28.62
Control 8	73	16.46±0.60	4.27±0.09	3.30±0.04	4.70±0.02	6.49	11.98±0.79	167.67±19.95

Tab. 2. The main indicators of milk quality

Traits	Summary of Data						
	Number of samples	Mean	Standard Deviation	Standard Error of Mean	Variability	Minimum	Maximum
Milk quantity (kg)	576	14.76	5.51	0.23	37.31	5.20	37.20
Fat (%)	576	3.92	0.73	0.03	18.56	2.44	6.80
Protein (%)	576	3.37	0.36	0.02	10.79	2.06	4.88
Lactose (%)	576	4.77	0.29	0.01	6.00	3.19	5.41
Ph	576	6.54	0.11	0.00	1.62	5.18	6.78
Urea (mg/dl)	576	13.75	6.53	0.28	47.50	0.20	45.10
Somatic cell (cell*10 ³)	576	189.50	222.22	10.50	117.26	7.00	986.00

lactose, pH, urea and somatic cell count (SCC). The evaluation of the main indicators of production both quantitatively and qualitatively of dairy cows milk was performed at the didactics UASVM farm.

RESULTS AND DISCUSSION

Analyzing the main indicators of milk quality produced in 2015, from the herd exploited in the UASVM farm, is found: milk production was on average 14.76 kg/day, the fat content was on average of 3,92%, with a minimum of 2,44% and a maximum of 6,80%; the protein content was on average of 3,37%, with a minimum of 2,06% and a maximum of 4,88%; the lactose shows an average of 4,77%, and pH 6.54.

Regarding the milk urea content, it was an average of 13.75mg/dl, with a minimum of 8.04 mg/dl in the fifth control and maximum on the first control by 19.37 mg/dl. The optimal concentration of milk urea nitrogen is between 8 and 14 mg/dl (Ishler, 2008). If exceed 14 mg/dl, it means that the protein content of forage is too high and should be reduced accordingly, and if urea level drops below 8 mg/dl means that both energy and protein forage are administered poorly. Analysing

the quality of raw milk in terms of its somatic cell content, it was found that from total number of cows, 79% shows a very good udder quality, somatic cell count did not exceed 200,000 cell/ml and 21% of animals are suspected by subclinical or clinical mastitis, somatic cell counts are above 200,000 cell/ml.

CONCLUSION

The research showed that the breeding of Romanian spotted breed cattle must be oriented to improve profitability by increasing animal productivity both quantitatively and especially qualitatively using rational feeding.

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