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RESEARCH ON THE BACTERIOLOGICAL QUALITY OF MILK OBTAINED IN SHEEP FARMS IN BIHOR

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Abstract

The need to increase milk production of sheep is the very high biological and economic value. Due to the rich content of almost all nutrients, especially in essential amino acids, different enzymes, vitamins and mineral salts, as well as the tonic and antitoxic action, milk is one of the most complete and necessary elements in both lamb and human food. At the same time, milk also has a commercial significance if the resulting surplus is used in the manufacture of different types of cheese or consumed as such according to preferences.

Keywords: sheep milk, bacteriological examination

INTRODUCTION

Research on the quality of sheep's milk and the influence of genetic and environmental factors on it began in France (1962) when the sheep's mechanical milking was first performed. This sheep-farming management has been extended to most European countries (PURROY UNANUA 1986), resulting in the emergence of a dairy industry of sheep's milk. In this context, research into optimizing growth technologies and obtaining milk with specific processing qualities occupies an important place in the field of sheep breeding.

Since most of the milk production is converted into dairy products, the milk qualities are analyzed in terms of its ability to process (BENCINI AND PULINA, 1997). In this context, the quality and quantity of cheese depends on particular on the milk coagulation properties (USTUNOL and BROWN 1985; BUTTAZZONI and ALEANDRI 1990; CAVANI et al. 1991).

MATERIAL AND METHODS

The bacteriological quality of the milk was assessed by determining the NTG / ml collection milk, the samples being collected from four holdings located on the territory of Bihor county, but also from the milk collected in

communal flocks or from households with 20-100 sheep, which they milking owners.

During the study period, a large number of bacteriological exams were performed by sowing and growing the germs on the nutrient agar (direct method), but the methylene blue method (indirect method) was also used.

Determination of NTG milk

Determination of NTG by direct method

For determination of NTGMA / 1 ml of milk, the methodology of Romanian Standard SR EN ISO 4833/2003 was used: Microbiology of food and fodder. Horizontal method for counting microorganisms. Colony Counting Technique at 30^0C.

The standard is identical to the European standard EN ISO 4833/2003: Microbiology of food and animal feedstuffs. Horizontal method for the enumeration of microorganisms. Colony count technique at 30^0C.

Determination of NTG in milk by indirect method.

Method with methylene blue

In a test tube, add 1 ml of freshly prepared methylene blue solution and 10 ml pre-heated milk at 38-400C. After homogenization, the tube is placed in a thermostat at 37 ° C, following the fading time. Depending on the duration of the discoloration, the quality of the milk and its charge with germs are appreciated.

Determining the number of germs in milk through the sample with methylene blue, poor hygiene conditions were found.

RESULTS AND DISCUSSION

Of the 100 samples analyzed in each of the four sheep farms, the following results were obtained by the methylene blue method (table1. fig. 1):

Tabelul 1

The interpretation of results of the methylene blue test

Farm/number of samples	The time interval from which emerged the discoloration	Estimated number of germs/ml milk	Milk quality and grade
Farm 1/23 probe	3,45 – 3,50 ore	De la 500.000 la 4 milioane	Satisfăcătoare, II
Farm 2/28 probe			
Farm 3/32probe			
Farm 4 /29 probe			
Farm 1/58 probe	1,5 – 2,0 ore	De la 4 la 20 milioane	Nesatisfăcătoare, III
Farm 2/50 probe			
Farm 3/61probe			
Farm 4/ 56probe			
Farm 1/17 probe	20 - 25 minute	Peste 20 milioane	Foarte proastă, IV
Farm 2/20 probe			
Farm 3/7probe			
Farm 4/ 9probe			
Farm **1/2probe**	Peste 5 ½ ore	Sub 500.000	Bună, I
Farm 2/2probe			
Farm **3/0 probe**			
Farm **4/6probe**			

On farm 1, out of 100 samples analyzed 23% satisfactory samples (1,500,000 - 3,900,000 N.T.G./1ml milk); 58% unsatisfactory samples (4,000,000 - 20,000,000 N.T.G./1ml milk); 17% very poor quality samples (over 20,000,000 N.T.G. / 1ml milk); 2% good quality samples (less than 500,000 NTG / 1ml milk).

On farm 2 the situation is as follows: 28% satisfactory samples (2,000,000-3,600,000 N.T.G./1ml milk); 50% unsatisfactory samples (5,500,000 -9,000,000 N.T.G./1ml milk); 20% very poor quality samples (over 15,000,000 N.T.G / 1ml milk); 2% good quality samples (less than 500,000 NTG / 1ml milk).

On farm 3, of the 100 samples analyzed 32% satisfactory samples (2,450,000 - 3,700,000 N.T.G./1ml milk); 61% unsatisfactory samples (6.500.000 -10.100.000 N.T.G./1ml milk); 7% very poor quality samples (over 19,000,000 N.T.G. / 1ml milk).

On farm 4 the situation is as follows: 29% satisfactory samples (2,300,000-5,000,000 N.T.G./1ml); 56% unsatisfactory samples (5,000,000 - 10,700,000 N.T.G./1ml); 9% very poor quality samples (over 15,000,000 N.T.G. / 1ml); 6% good quality samples (less than 500,000 NTG / 1ml milk.

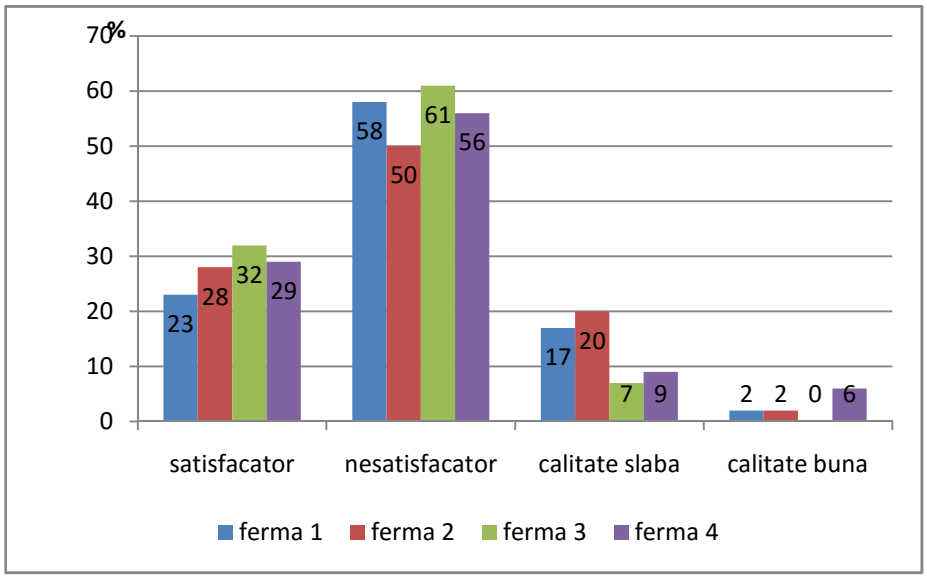

Fig. 1. Graphic representation of results by the methylene blue method

In other controls on small farms (20 - 50 heads) and medium (51 to 120 sheep and goats), the following situation was found:

 Farms with poor hygiene conditions: 1,5 - 8,9 million NTG / ml milk;

 Farms with mediocre hygiene conditions: 500,000 - 2,5 million NTG / ml milk;

 Farms with good hygiene: 250,000 - 1,5 million NTG / ml milk;

 Farms with monitored milking conditions 58,000-525,000 NTG / ml milk.

In Romania, there is little data on the bacteriological quality of sheep milk obtained on farms. MAN C. et al., (2002) reports that under poor (normal) farm conditions, collection milk had an average of 2.600.000 germs / ml, with a range of 200.000 to 9 million.

CONCLUSIONS

The data accurately reflects the concrete, precarious conditions on the milk line, especially poor hygiene during milking. The manual rear-end muller, executed in the open air, wind, rain, causes the milk to be quickly contaminated with dust, microorganisms, various impurities.

The large germ load of milk obtained explains many of the organoleptic, physico-chemical and bacteriological deficiencies of the products processed from this milk.

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