

## APPRAISAL OF THE MILK QUALITY AT THE LEVEL OF TELEORMAN COUNTY IN THE YEAR 2008

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### Abstract

*Once with the entrance in European Union, at the national level occurred a series of changes compelled by the Union on the agro-alimentary products' improvement, among them also being the milk quality.*

*So, in the milk quality appraisal it has been imposed the performance of the laboratory analysis, in certified laboratories, of the fresh milk probes, randomized taken, derived from the non-vocational farms or exploitations of milk livestock producer. This appraisal was necessary to establish the traceability with the aim to provide the food safety along the entire chain from the processing farm until the end consumer.*

*For quality milk is outside of breeding healthy animals and normal composition, must be obtained in terms of hygiene, conditioning his right delivery and processing and sale of appropriate conditions.*

*In this paper we analyzed the milk quality at the level of Teleorman County in the year 2008, from the point of view of the total amount of germs, of somatic cells, of fat and protein percent. In order to assess these parameters they have been used the analysis methods asserted by the Commission Regulations (EC) No 1664/2006 amending Regulation(EC) No 2074/2005 as regards implementing measures for certain products of animal origin designed for the human consumption.*

*So by the Order No 69023/2007 of the National Authority Sanitary Veterinary and for the Food Safety and the Direction of Hygiene and Public Health established markers and parameters where the milk must enclosed form the qualitative point of view, observing the EU requests in the field.*

*These indicators imposed by the European community are required to be done after 2009 and according to the classification of milk in these parameters is to conform or comply, thereby setting the destination of.*

Keywords: milk, quality, analysis

### 1. INTRODUCTION

The bacteria and germs represent vegetal or animal microscopic organisms; these come both from the cow's udder, and especially from the exterior environment – milker, buckets, by getting manure in the milk while the cow is milked.

The bacteria are microorganisms which, when the temperature doesn't drop below 4-6°C, propagate three times each minute; so from a bacterium in 7 hours can propagate two millions bacteria. The bacteria from the milk are responsible for the lactic, butyric, propionic fermentation; others are involved in putrefaction, and others, the coliforms, coming from the environment. The bacteria amount from milk give a precise information about the milking hygiene, and the conservation of the cow milk.

The somatic cells from milk come from the cow's udder and give information about the

fetus that either emerge clinical signs, or not (the disease isn't visible), the cow has the udder sick – the disease is called mastitis. The mastitis is an infectious disease which emerges following the inflammation of the udder's tissue because the microbes from the udder. The somatic cells are cell especially made in the cow's body to fight against the bacteria infections. The somatic cells are especially represented by the leucocytes and the epithelial cells which cover the secretive alveoli. The milk coming from cows suffering of mastitis is called mastitis milk.

So, to get milk according to the EU standards they must be observed the following:

- The milking hygiene– the milking must be performed in the established hygiene conditions by the “Sanitary veterinary norm on the general hygiene rules in the milk farms”;
- Immediate after the milking, the milk must be placed in a clean place, so that to allow the avoidance of its qualitative depreciation, so if

the milk isn't collected in maximum 2 hour from the milking it has to be cooled at a temperature of 8°C or lower, in the case of daily collecting, and at 6°C or lower, in case when the collection it isn't daily;

- During the transport to the treatment and processing unit the cold milk temperature doesn't have to exceed 10°C, excepting the cases when it has been collected in maximum 2 hours from milking;

- It must be a hygiene of rooms, equipments, and devices, so that when the milk touches them doesn't contaminate; the equipment, devices must be made of smooth materials, easy to clean and disinfect, persistent against corrosion and which don't transfer to the milk dangerous agents for the public health;

- It must be hygiene of the personnel who deal with the milking and milk handling.

In order to accept the fresh milk in the units for treatment and processing they have been enforced some standards as like the total amount of germs for the cow milk on the plate at 30°C (per. ml) which has to be lower or equal to 100,000, and the amount of somatic cells has to be lower or equal to 400,000; for the buffalo fresh milk the total amount of germs on the plate at 30°C must be lower or at least equal to 1,000,000, and the somatic cells amount has to be lower or at least equal to 500,000.

## 2. MATERIAL AND METHODS

For the elaboration of this paper they were performed researches in several milk processing units, existing also collaboration with the sampling and processing laboratory of the milk probes belonging to the Direction Sanitary Veterinary and for Food Safety Teleorman. As a work method it has been used both the determination by the classic method of the total amount of germs, and using some modern devices for its determination.

Although the amount of contained germs in one cm<sup>3</sup> of milk doesn't show the germs nature, however a very high value it emphasizes the pollution suffered by the milk

during the vicious handling or treatments performed.

With the purpose to find the total number of germs from the milk they are used direct and indirect methods.

In the first group are the classical microscopic methods of computation, which are examined after coloration, and the number of germs is evaluated using the classic methods.

Among the indirect methods, for determination of the total number of germs from the milk, the most used method and provided in the most of the standards is the Petri plates methods or the method defined by Koch. It starts from the reason that from each microorganism existing in the researched substrate it develops a culture when it is perform the insertion in an adequate nourishing environment.

It must be define that even from a group of microorganisms it develops a culture.

With the aim that the obtained results to be very close to the reality it must taken into consideration a series of factor such as:

- The distilled water used for dilutions, it found to have a bactericide effect, therefore C. Ieniştea recommends as diluting mediums the sterile tap water, isotonic salt solution, distilled buffered water.

- The Petri plate incubation must be performed depending on the microorganism type, which can be psihrofil, mezophyl or thermophyle.

- The used nourishing substrate has to be as much as similar to the studied aliment. For this reason most frequently it is used even the respective aliment, sterilize or in an environment which has a very close composition of its composition.

Among the indirect assessment methods of the milk bacterial content, they are also the reductase probe and catalase probe. The reductase is an enzyme of microbial origin of whose activity varies in a direct ratio with the bacterial content of the milk.

• Working method – the probe with metilenum ceruleum: into a sterile test tube it is introduced 1 cm<sup>3</sup> of metilenum ceruleum (metilenum ceruleum 50 mg + 1000 cm<sup>3</sup> of distilled water, and 10 cm<sup>3</sup> of milk to be researched, previously wormed at 38 – 40°C.

After mixing, the test tube is placed in the water or thermostat at 37°C. The discoloration is watched in three intervals: after 20 minutes, after 2 hours, after 5 ½ hours. The determination it is considered done when whole milk probe discolored. The explication of the probe results with metilenum ceruleum is performed according to the table, depending on the type of milk discoloration (table 1).

### 3. RESULTS AND DISCUSSIONS

In the table 2 it is shown the quality condition of milk as a collected and analyzed raw material by the Direction Sanitary Veterinary and for Food Safety Teleorman, the study being accomplished at a series of milk collecting and processing companies. Thus from 8 processing units and 6 collecting centers resulted 10,520 l of conform milk, respective less or equal to 100,000 NTG/ml, this fact signifying the growers where from this milk has been collected could enjoy the subvention per liter of milk. More than that, this milk complies with the demands enforced by the EU, from the qualitative point of view.

The largest quantity of milk, 134,012 l, is the nonconform milk, contained between 100,000-1,000,000 NTG/ml, it was obtained from 87 processing units and 104 collecting centers, this kind of milk can be processed until the end of 2009, being not subsidized by the state.

A significant amount of 30,732 liters milk is inconsistent with the total bacterial count of more than 1,000,000, being an unwholesome milk obtained from households where hygiene conditions are not met.

The performed analysis for the fat and protein percent shows their value is more than 3.2% for the entire amount of milk.

All of may 2 shows the table number and the fact that the entire quantity of milk received by processors is under STAS sites in force, as a result of tests performed.

### 4. CONCLUSIONS

As a consequence of those demonstrate it results the conform milk represents at the level of Teleorman County about 6% of the total quantity of existent milk, a very low quantity that fulfill the conditions enforced by the EU, and in case when after 2009 they are maintain the same conditions, the county will not have milk for processing, being necessary to ask for new sources from outside of the county or from import.

The main reason that milk is inconsistent in a quantity so large is due particularly poor hygienic conditions, the phase of milking and storage and handling.

### 5. REFERENCES

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**Table 1. Explanation of the metilenum ceruleum probe result (after V. Stănescu, 1998)**

The time interval when it emerged the discoloration	Milk quality	Class	Presumptive number of germs per 1cmc of milk
Over 5 ½ hours	Good	I	Less than 500,000
From 5 ½ hours up to 2 hours	Satisfactory	II	From 500,000 la 4 million
Less than 2 hours up to 20 minutes	Poor	III	From 4 to 20 million
Sub 20 minute	Very poor	IV	Over 20 million

**Table 2. Appraisal of the milk quality at the level of Teleorman county in the year 2008**

PARAMETERS		Quantity - I			Amount of probes		
		Processing units	Acquisition centers	Livestock exploitation	Processing units	Acquisition centers	Livestock exploitation
NTG/ml	< 100.000	10.520	4.870	831.425	8	6	610
	100.000-1.000.000	134.012	131.465	9.350	87	104	13
	> 1.000.000	30.732	29.920	875	10	21	2
NCS/ml	< 400.000	48.383	146.166	623.257	40	50	359
	400.000-600.000	11.054	11.164	11.256	5	10	9
	>600.000	87.138	31.563	22.380	44	21	26
FAT %	< 3.2	-	-	-	-	-	-
	-	-	-	-	-	1	-
	> 3.2	51.496	34.900	-	34	21	-
PROTEIN %	< 3.2	-	-	-	-	-	-
	-	-	5.800	-	-	3	-
	> 3.2	51.496	28.550	-	22	18	-
IMPURITY DEGREE	0	-	-	-	-	-	-
	I	-	-	-	-	-	-
	II	-	-	-	-	-	-
	III	-	-	-	-	-	-
INHIBITOR SUBSTANCES	P	-	-	-	-	-	-
	A	-	-	-	-	-	-
CRYOSCOPIC STATION	C	-	-	-	-	-	-
	N	-	-	-	-	-	-

Total quantity of analyzed input = **31,680 l**

Total quantity of received input in the processing stations = **1,255.8**