The Presence of Somatic Cells in Milk in Salaj County

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Abstract. Within the study made, there were tested samples of fresh cow milk in an area in Sălaj County. The test was made with the help of Somacount equipment produced by Bentley–USA. The presence and NCS in milk represents a highly important problem under the aspect of public health, animal welfare and also regarding the juridical aspect. Out of 243 samples of milk examined, a number of 85 samples (34.95%) contained less than 100000 NCS/ml and 87 samples (35.80%) contained between 101000–400000NCS/ml. So 70.78% of the samples were within the legislative frame of EU, the rest of 29.20% overcoming the allowed limits.

The arithmetic average was of 437877/ml, a little increased compared to the data in the scientific literature, 412000NCS/ml-Lombardia 316000NCS/ml-SUA but the heterogeneity of the cows, the differences in the maintaining system, milking, feeding, hygiene in the provenience area of milk, do not allow an objective comparison.

The correlation between the results of the exam for NCS and the results of CMT is not significant, statistically being very reduced, of course on one hand due to the subjective way to appreciate the results CMT. The laboratory equipment Somacount 150 is extremely rapid and precise in determinations, fable, easy to manipulate and to be maintained.

Keywords: somatic cells, milk, samples, cow.

INTRODUCTION.

The presence of somatic cells in milk was noticed a long time ago and the significance and their importance are generally accepted, but regarding their number and especially the maximum limit admitted for the physiological milk with no restrictions in the human consumption, that is a controversial subject, because here it is involved, besides the implications in the human’s health and the legally implications, maximum limits admitted being different in countries, max.400000NCS/ ml-UE, max.750000NCS/ml-USA, max.500000NCS/ml-Canada (1,7).

The maximum limit for NCS/ml legally admitted has implications in the international commerce, this being different in several countries as it can be seen and the big exporters try to impose their own standard in these commercial relations.

It is accepted the fact that there are two types of cells in milk: “foreign” cells (bacteria, fungus, parasites) and cell inside the body, somatic cells (macrophages, lymphocytes, polymorph nuclear) (1, 8).

At healthy cows, NCS is 100000/ml, but a NCS de 200000/ml, shows that a reduce number of caws of the cattle have infection at udder.

The increase of NCS in direct correlation with the production of milk (at a NCS of 400000/ml, the loss is about. 1360gr/caw/day) (1). Also the specific milk consumption in order to obtain a kg cheese is as higher as NCS is high and the quality of cheese and their preservation are much affected by an increased NCS (1, 4, 5).
That is why, the milk processors give a better price for the milk with a reduced content of somatic cells and because of that, there are several methods to detect NCS and obviously the health level of the mammary gland, the most known being CMT (California Mastitis Test) and the direct numbering of the somatic cells.

MATERIALS AND METHODS

Within the study made, there were tested samples of fresh caw milk in an area in Sălaj County.

The test was made with the help of Somacount equipment produced by Bentley–USA. The equipment functions based on the following principle: cellular DNA is marked with ethidium bromide, these becoming fluorescent and then they are put through a LASER ray fascicle and produce a luminescent emission.

This is taken by a system of mirrors and transformed in electric pulse, which are processed, the number and the pulses representing NCS. The results are and can be registered and printed (10).

All the samples with NCS over the admitted limits were examined from the bacteriologic point of view and there were tested with the help of CMT.

From the samples with NCS over the allowed limit there were isolated pathogen bacteria (Stafilococ, Streptococ, E. Coli) and there were made anti bio grams.

RESULTS AND DISCUSSIONS

As it can be seen in the following table, out of the total of 243 tested samples, a number of 85 samples (34.98%) contained under 100000 NCS/ml, 87 samples (35.80%) contained between 101000-400 000 NCS/ml and a number of 71 samples (29.51%) overdone the limit of 400000 NCS/ml, maximum admitted by the EU rules. It is to be remarked that a number of 25 samples (10.29%) overdid 1000000 NCS/ml, the maximum number being of 10000000 NCS/ml.

From the sums it results that the arithmetic average of NCS was 437877/ml.

The rate of positive samples at CMT, out of the ones with NCS over the admitted limit, was extremely reduced, insignificant from the statistical point of view (8.4% of the number of samples with NCS over the allowed limit, were positive at CMT). From 71 samples with NCS over the allowed limit a number of 6 samples reaction was positive at CMT and a number of 11 samples had a reduce positively reaction, which was not conclusive, among which there is also the milk sample which contained over 10000000 NCS/ml.

The results obtained at the control of the milk samples for NCS

<table>
<thead>
<tr>
<th>Nr. Crt.</th>
<th>Nr. Received samples</th>
<th>Nr. Unsuitable samples</th>
<th>Nr. Examined samples</th>
<th>RESULTS OF THE TEST</th>
<th>Results CMT positive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>under 100 000 per ml</td>
<td>101 000-400 000 per ml</td>
<td>401 000-1 000 000 per ml</td>
<td>over 1 000 000 per ml</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>-</td>
<td>14</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>-</td>
<td>26</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Tab. 1
CONCLUSIONS

The presence and NCS in milk represents a highly important problem under the aspect of public health, animal welfare and also regarding the juridical aspect (1,7).

- out of 243 samples of milk examined, a number of 85 samples (34.95%) contained under 100000 NCS/ml and 87 samples (35.80%) contained between 101000–400000 NCS/ml. So 70.78% of the samples were within the legislative frame of EU, the rest of 29.20% overcoming the allowed limits.

- the arithmetic average was of 437877/ml, a little increased compared to the data in the scientific literature, 412000 NCS/ml-Lombardia (2), 316000 NCS/ml-SUA (3) but the heterogeneity of the caws, the differences in the maintaining system, milking, feeding, hygiene in the provenience area of milk, do not allow an objective comparison.

- the correlation between the results of the exam for NCS and the results of CMT is not significant, statistically being very reduced, of course on one hand due to the subjective way to appreciate the results CMT (5)

- the laboratory equipment Somacount 150 is extremely rapid and precise in determinations, fable, easy to manipulate and to be maintained

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