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Researches on the Somatic Cells in Buffalo Cow Milk and Their Significance

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Abstarct. It has been proved that there is a direct correlation between the somatic cells within the buffalo cow milk and the health state of the mammary gland.

The presence of somatic cells in the milk has a hygienic significance in tracking down subclinical mastitis which often develops.

The number of somatic cells in the buffalo cow milk is considered a more sensible test than determining the percentage of chloride, the value of lactose, the value of serum albumin, the measurement of electric conductibility and of enzymatic activity.

INTRODUCTION

The main somatic cells in the buffalo cow milk are grouped into 4 categories:

a) neutrophile plynuclear leucocytes with a role in defending against infections originating from the blood flow

b) macrophages with a role of phagocytosis which constitute an infection free cell type

c) lymphocytes which participate in the immunity system of humoral or cellular type

d) epithelial cells which originate from the superficial desquamation of the secretion and glandular tissue

MATERIALS AND METHODS

The Fossonatic 90 based on the principle of fluoric-optical-electronic deflection is used to count the somatic cells in the buffalo cow milk.

Our study examined individual samples from the stabulation and grazing season, buffalo cow milk samples, mixtures from means of transport and from the catchments within the industrialization unit as well as samples from different animals with urogenital affections.

The sampling was done after a prior homogenization of the milk and then refrigerated at 0-4°C or preserved with potassium bicarbonate and transported to the laboratory within 24 hours.

The following values were obtained for the samples originating from the stabulation and grazing season.

Tab. 1

The evaluation of the somatic cells number according to season

Season	N	Minimum	Maximum	X	S	SX	CV%
Grazing period	98	13500	22300	16400	1.3	0.1	7.9
Stabulation	130	34000	98000	58200	11.2	0.9	19.3
Total	228	13500	166000	57500	20.6	1.3	35.8

It has been noted that the mean values of the number of somatic cells during the grazing season is lower than in the stabulation period with 28.52%

The difference between the lowest and highest values of the grazing season is of 60.54% whereas the difference between the lowest and highest values of the stabulation period is of 34,69%

The following results have been obtained through statistical analysis:

Season	d	t	significance
Grazing period x stabulation	-41.83	41.88	xxx
Grazing period x total	-41.10	63.46	xxx

The differences between the values obtained during the grazing period as compared to the stabulation period and the total value are highly significant.

The following values have been registered by monitoring the evolution of the number of somatic cells within the 10 lactations.

Tab. 2

The evolution of the number of the somatic cells according to lactation

Lactation	n	Min. value	Max. value	x	s	sx	Cv%
I	13	39000	89000	55070	15.3	4.4	27.8
II	14	41000	86000	62000	13.1	3.6	21.1
III	14	38000	98000	59000	14.7	4.1	25.0
IV	14	46000	76000	60000	8.7	2.4	14.6
V	14	52000	86000	64200	9.0	2.5	14.0
VI	14	49000	66000	58600	4.6	1.2	7.9
VII	14	45000	74000	60400	7.2	2.0	11.9
VIII	14	39000	67000	56400	7.5	2.0	13.3
IX	14	34000	68000	50700	11.1	3.0	21.9
X	5	45000	56000	50000	4.1	2.0	8.2

From the buffalo cow milk mixture 25 samples were taken and their somatic cells numbered and it has been noted that 92% of them have under 100.000 somatic cells/ml and only 8% over this value.

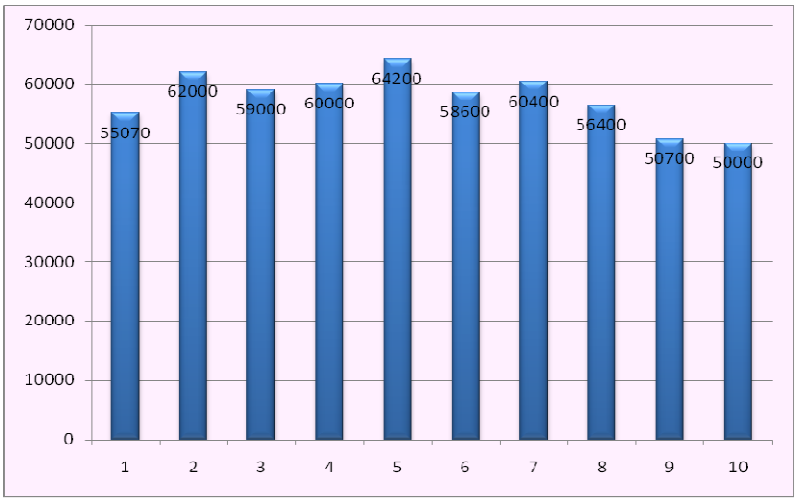

Fig.1.The evolution of the number of somatic cells in the milk mixture

Tab. 3

The variation of the number of somatic cells from the buffalo cow milk according to lactation

Cells number	Sample milk mixture number	%
Under 100 000	23	92
100 000 – 300 000	2	8
Over 300 000	-	-

Through identifying the animals from which the milk with low number of somatic cells originates, individual samples were taken from 75 lactate bubaline clinically examining each animal. The following top is the result of the analysis carried on the 328 samples of buffalo cow milk mixture and on the samples taken individually from the clinically healthy animals or the animals with different urogenital affections:

Tab. 4

The evolution of the number of somatic cells in the different pathological states of the lactate buffalo cows

Cells number	Sample number	%	Observations
Under 100 000	69	92.0	clinically healthy
100 000 – 300 000	5	6.6	different urogenital affections
Over 300 000	1	1.4	recurrent uterine prolapsed with suture

There is a statistically significant difference when comparing the mean numbers of the somatic cells from the grazing season with the stabulation season as shown in the following table:

Tab. 5

The mean value and the measurement of variability and the differences between the mean values for all the features considered in the study

Season	n	X ± sx	s	V%	Dir.	t	Semnification
CELSO grazing period	98	16.40 ± 2.90	22.6	50.5	-1.5	3.0	xx
CELSO stabulation	130	58.23 ± 0.99	11.2	19.3			

CELSO – Number of somatic cells x 10^{-3}

RESULTS AND DISCUSSIONS

It can be noted that the number of somatic cells in the buffalo cow milk is higher during the stabulation season as compared to the grazing one in accordance with the increased milk production in this period.

When comparing on lactations, the highest number of somatic cells is registered in the 5^{th} lactation, after which it decreases gradually up to the 10^{th} one but it does not exceed the value of 100,000 cells/ml milk.

In certain urogenital affections an increase in the number of somatic cells between 100,000 and 300,000 cells/ml can be noted and in only one case the latter was exceeded.

The frequency of subclinical mastitis at bubaline is more reduced than at taurine, a fact which is proved by using this health indicator of the mammal gland.

The researches have proved, so far, a variation of the number of somatic cells at the same animal in the case of unfractionated milking with their insignificant increase at the

beginning of the milking as compared to its end, inversely proportional with the value of the fat content.

CONCLUSIONS

Neither the specialty literature nor the EU standards have specified the physiological values of the number of somatic cells in the buffalo cow milk or the maximal limits of this parameter.

The results of the analyses carried out in the present study on a number of 328 samples of individual milk and milk mixture can be gathered in the following top:

- up to 100,000 cells/ml –normal values
- between 100,00 – 300,000 cells/ml – increased values
- over 300,000 cells/ml – suspected infection

The low level of somatic cells and the absence of subclinical mastitis can be explained through the existence of a reduced number of buffalo cows on an establishment, manual milking and the increased natural resistance of the buffalo cows to mammal infections.

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