

CORRELATIONS AMONG THE NUMBER OF SOMATIC CELLS AND LACTOSE CONTENT IN BOVINE MILK

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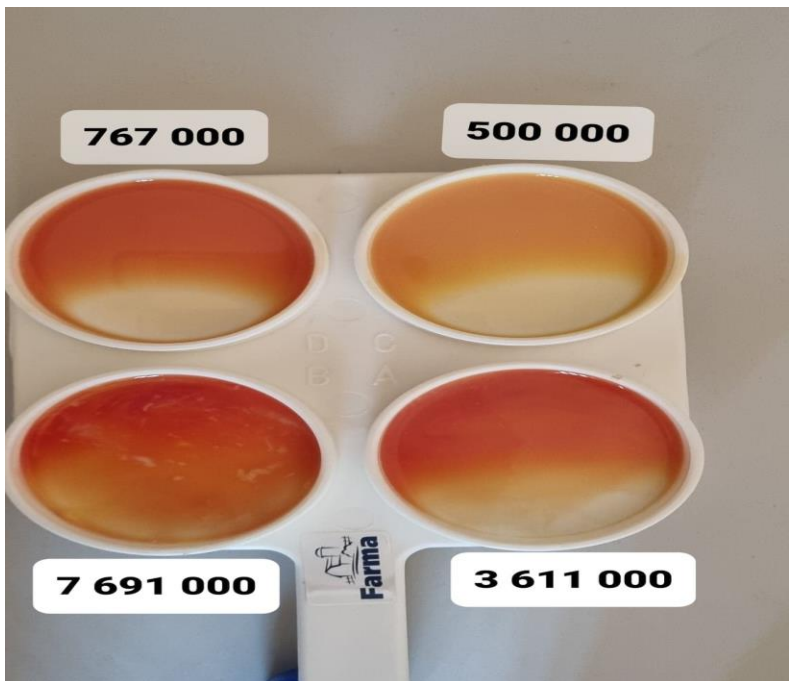
Abstract: Bovine mastitis, defined as the inflammation of the mammary gland, is the most important diseases of the mammary gland in cows due to the considerable losses in milk production and the danger that milk from ill cows poses to public health. The number of somatic cells in milk is the most important indicator used for directly evaluating the condition of the mammary gland and the quality of the milk. The development of inflammatory disease in the mammary gland is indicated by somatic cell counts above 200 000 cells per milliliter. Differences in the composition of milk, such as its lactose content, are related to variations in the number of somatic cells. The present paper summarizes the current knowledge regarding the correlations between lactose content and milk somatic cell count, and the potential of this parameters as a biomarker for assessing udder health status in modern dairy cow health prevention programs.

• Introduction

- One of the most common bovine illnesses that harms the dairy sector the most is bovine subclinical mastitis, which has a high incidence worldwide.
- Due to changes in the homeostasis of the mammary glands during mastitis infection, an increased number of somatic cells has been observed to be associated with a drop in milk lactose percentage.
- According to Berglund et al. , a decrease in lactose (from 4.86 to 4.69%) is correlated with an increase in somatic cell count.
- The prevalence of subclinical mastitis in dairy cattle herds depends on herd management and housing (indoor versus outdoor) systems, and on the quantity and diversity of udder pathogens.

• Material and method

- California mastitis test (CMT)



- The automated analyzer - FTIR CombiScope 600/300 (LactoScope FTIR 600/300 and SomaScope LFC 600/300) was used to determine physicochemical parameters (fat, dry matter, protein, lactose, density) and somatic cell count (NCS).



• Results and discussions

- Lactose in milk from healthy cows is around 4.7% and lactose in milk of mamitic has a content between 2.8 and 3.5%.
- The lactose content and the somatic cell count in the cow's milk samples were evaluated and correlations between the two parameters were established.

Nr. Crt.	Samples	SCC x10 ³ cells/mL	Lactose, %
1.	P1	96 000	4.69
2.	P2	287 000	4.77
3.	P3	500 000	4.53
4.	P4	767 000	4.50
5.	P5	849 000	4.02
6.	P6	2 677 000	2.25
7.	P7	4 649 000	3.36
8.	P8	3 611 000	3.51
9.	P9	4 753 000	3.37
10.	P10	6 170 000	3.02
11.	P11	7 691 000	2.80
12.	P12	8 670 000	0.99

Conclusions

- Results highlight the significance of lactose as a possible biomarker for mastitis in cattle.
- This indicator may be used in controlled herds to support efforts to avoid subclinical mastitis by providing additional data on cows with possible udder inflammation.