

## CHANGES IN THE CONTENT OF WHEY PROTEINS DURING LACTATION IN COW'S MILK WITH A DIFFERENT SOMATIC CELLS COUNT

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**Abstract.** The objective of this study was to determine the effect of stage of lactation and hygienic quality of milk on the content bioactive whey proteins. The experimental material was milk from 56 cows of the Polish Holstein-Friesian breed (phf). In the 1<sup>st</sup>, 5<sup>th</sup> and 10<sup>th</sup> month of lactation, milk samples were collected for analyses from each cow. Each sample of fresh milk was analysed for the proximate chemical composition with a MilkoScan FT 120 apparatus and for somatic cells count (SCC) using a BactoCount apparatus. The contents of  $\alpha$ -lactalbumin ( $\alpha$ -LA) and  $\beta$  lactoglobulin ( $\beta$ -LG) were assayed electrophoretically following the methodology by Laemmli (1970); the contents of lactoferrin (LF), interleukins (IL-1 $\beta$ , IL-6), and tumor necrosis factor TNF- $\alpha$  were determined by the "sandwich" ELISA method. The achieved results suggest that the stage of lactation affected the content of the analyzed bioactive proteins in cow's milk. The higher content of the analyzed proteins at the last stage of lactation allows concluding that the best raw material for the isolation of functional properties is milk originating from the final stage of lactation. An increasing content of SCC decrease the content  $\alpha$ -LA and  $\beta$ -LG. An opposite dependence was observed for proteins that play the role of inflammatory mediators. The concentrations of LF, IL-1 $\beta$  and TNF- $\alpha$  were found to depend on the somatic cells count in milk, what indicates that the analysis of their contents in milk may constitute a complementary indicator of mastitis incidence.

**Keywords:** lactoferrin, cytokines, mastitis, stage of lactation.