

August 20-21, 2018
Amsterdam, NetherlandsEwelina Kawecka et al., Biochem Mol Biol 2018 Volume: 4
DOI: 10.21767/2471-8084-C3-014

IMPACT OF COAGULASE-NEGATIVE AND COAGULASE-POSITIVE STAPHYLOCOCCI INFECTION ON EXPRESSION OF SELECTED IMMUNE SYSTEM GENES IN DAIRY CATTLE MAMMARY GLAND PARENCHYMA

Ewelina Kawecka^{1, 2, 3}, M Zalewska¹, D Reczynska¹, P Brodowska¹, M Rzewuska², D Sloniewska¹ and E Bagnicka¹

¹Institute of Genetics and Animal Breeding Polish Academy of Sciences, Poland

²Warsaw University of Life Sciences, Poland

³Leading National Research Centre Scientific-KNOW, Consortium "Healthy Animal- Safe Food" Ministry of Science and Higher Education, Poland

Inflammatory state of the mammary gland (mastitis) is mainly caused by bacteria. Mastitis is characterized by physical, chemical and microbiological changes in the milk composition. Both clinical and subclinical mastitis causes economic losses. Commonly two groups of staphylococci, important agents of mastitis, are distinguished: coagulase-positive (CoPS) and coagulase-negative (CoNS). CoPS cause predominantly chronic subclinical mastitis while CoNS are considered as minor pathogens causing mild clinical disease. The study was performed to measure differences in the level of expression of genes *CXCL5*, *ITGAL* and *CCR1* in udder secretion tissue taken from cattle infected with CoPS and CoNS and from healthy animals. The study was conducted on 40 Polish Holstein-Friesian cows of Black-and-White variety. The animals were suffering from chronic and recurrent mastitis. Altogether, 51 parenchyma samples from udder quarters were collected: CoPS-infected (N=25), CoNS-infected (N=13) and non-infected (N=13). Total RNA was isolated using RNeasy Mini Kit (Qiagen), then cDNA templates were prepared and gene expression was determined using qPCR (LightCycler 480, Roche). The GAPDH gene was used as a reference. The expression level of the *CXCL5* gene was higher in samples of animals infected with CoPS and CoNS than in non-infected ones. There were differences in the *ITGAL* gene expression between all three studied groups: higher mRNA level was in the CoPS-infected than in the CoNS-infected samples, and higher mRNA levels in the CoPS-infected and CoNS-infected samples than in non-infected ones. However, no differences in the expression of the *CCR1* gene between studied groups were observed. Increased expression of studied genes in both CoPS-infected and CoNS-infected animals proves that CoNS also trigger the immunity of udder secretory tissue, although, they are considered as less pathogenic bacteria.

Biography

Ewelina Kawecka is pursuing her PhD (2nd year) studies. Her Bachelors' thesis, at Cardinal Stefan Wyszyński University in Warsaw, was a typical review dedicated to acute myeloid leukemia. The research during Master studies was carried out at Warsaw University of Life Sciences (WULS-SGGW). The Master's thesis was focused on the mechanisms of the coat colour genes inheritance in coloured mice. Currently, her PhD studies are held in two places. The experimental part of the studies is conducted at the Institute of Genetics and Animal Breeding Polish Academy of Sciences, near Warsaw, but studies and lectures are performed on WULS, Veterinary Medicine Faculty. During her research, she is especially interested in Understanding of Complexity of Interaction between Phenotype and Genotype of Domestic Animals.

e.kawecka@ighz.pl