

Comparison of proviral load levels and mRNA expression of cytokines in peripheral blood mononuclear cells and milk somatic cells from BLV-infected cattle

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The bovine leukemia virus (BLV) is an exogenous retrovirus belonging to the *Deltaretrovirus* genus. This enveloped virus naturally infects B-lymphocytes causing enzootic bovine leukemia (EBL), which is spread worldwide, mainly in dairy cattle. The virus might produce cell-mediated immunity disorders, which may lead to opportunistic infections in BLV-infected cattle. Thus, the performance of dairy cattle is impaired, leading to large economic losses in the dairy industry. A study was carried out to investigate the levels of proviral load as well as mRNA expression of cytokines in peripheral blood mononuclear cells (PBMC) and milk somatic cells (SC) of low proviral load (LPL), high proviral load (HPL) and uninfected cattle (controls). A total of 51 BLV-infected cows and 16 controls were included. The levels of proviral load

in PBMC and SC as well as the expression levels of cytokine mRNA between LPL and HPL cattle were measured by real-time PCR (qPCR). LPL was detected in milk SC from BLV-infected animals. Three cytokines, IFN- γ , IL-12 and IL-6, were found to be up-regulated in the LPL group, and one cytokine, IL-10, was found to be down-regulated in PBMC. The expression levels of IL-12 mRNA in SC from LPL animals were higher than in the HPL group, while IFN- γ , IL-10 and IL-6 mRNA expression levels were significantly down-regulated. The results showed differences in cytokine expression in both PBMC and SC between LPL and HPL cattle. This is the first study to provide a functional phenotype of immune status by establishing a cytokine profile in milk SC from LPL, HPL, and BLV-negative cattle.

Keywords: BLV, bovine cytokines, PBMC, somatic cells, milk.