

Effects of herd and physiological status on variation of 16 immunological and inflammatory parameters during drying off and transition cow period

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Summary

During drying off and transition period, cows are subject to changes in endocrine status, metabolic stressors and altered immune functions, which could lead to an increased risk of diseases. To expand our knowledge on the immune/inflammatory status and to identify markers to define cow status during this interval, the pattern of 9 different cellular parameters, 5 cytokines, 2 enzymes and 3 cellular ratios in blood samples were assessed in 15 primiparous cows belonging to three different dairy herds in Lombardy. Our data showed that the variation of almost all parameters showed to be influenced by the physiological period in which the samples have been collected, except for apoptosis, IL-1 β , IL-6, lysozyme and granulocyte/monocyte ratio. Several markers showed to be directly correlated either to the herd, alone like IL-1 β , IL-6, lysozyme, granulocyte/lymphocyte ratio and granulocyte/monocyte ratio, or in association with the sampling time like white blood cell count, necrosis, lymphocytes count, CD4⁺ lymphocytes proportion. Hierarchical cluster analysis identified three herd-associated sample clusters showing different frequency along the follow-up period. The results of this field study highlight the importance of the herd

factor in immune/inflammatory response. Furthermore, these results point out that cellular parameters are probably the most suitable markers to define cow status during drying-off and peripartum period.