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The evaluation of non-specific immune status of heifers in field conditions during the periparturient period

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Abstract - During the periparturient period, some impairment of immune defences were observed. Reference values for the different non-specific immune parameters in cows are not generally available, thus limiting the application of these parameters in dairy practice. This paper reports the data on the measurements of different parameters in the blood, and explores the possible influence of the herd on the non-specific immune status of the cow. Five herds located in Northern Italy were selected and overall 39 heifers were enrolled in the trial. Blood samples were taken 14 and 7 days before the expected date of calving, then at 7, 14, 21, 28, 45, 60, and 75 days after calving. The parameters assessed were N-acetyl- β -glucosaminidase (NAGase), lysozyme, nitric oxide, superoxide dismutase, haptoglobin, respiratory burst, and serum protein profile. After calving, a significant decrease of respiratory burst and nitric oxide concentration were observed in comparison with the pre-calving values but not with the post-calving samplings. Total proteins, β - and γ -globulins showed a progressive and significant increase in concentration after calving, in comparison with pre-calving values. The results of the study confirmed that a decrease of immune functions can be observed in commercial dairy herds in the first four weeks after calving. The amplitude of this phenomenon is not common to all animals and all herds, suggesting the possibility to reduce the impairment by improved management and genetic selection.

Key words: heifers / periparturient period / blood / non-specific immunity

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Table of Contents

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