

Effects of lactation period and parity on raw milk composition in Holstein dairy cows⁽¹⁾

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Abstract

The study was conducted to investigate the effect of lactation period and parity on milk composition and related parameters. The relationships among milk parameters were also analyzed. A total of 1,256 sets of Dairy Herd Improvement data were obtained and grouped by lactation period and parity. The data included daily milk yield (DMY), milk fat percentage (MFP), milk protein percentage (MPP), milk lactose percentage (MLP), milk solids-not-fat percentage (MSNFP), milk total solid percentage (MTSP), somatic cell counts (SCC), somatic cell score (SCS), and fat to protein ratio (FPR). Data analysis showed that the DMY, MPP, MLP, MSNFP, MTSP, SCC and FPR were affected by both lactation period and parity. Whereas, MFP and SCC were only influenced by parities. Additionally, DMY, MFP, MLP, MTSP, SCS and FPR were affected by interaction between lactation period and parity. DMY in the 1st parity was significantly lower than in the 2nd, 3rd, and 4th parities, but MPP, MLP, MSNFP, MTSP, SCC and SCS were decreased with increasing parities. The DMY and FPR showed the greatest values in early period of lactation. On the contrary, MPP, MSNFP, MTSP, SCC, and SCS had the highest values in late period of lactation. The correlation analysis for indices showed that DMY had middle negative correlation with MPP ($r = -0.27$; $P < 0.001$), but low negative correlation with SCC ($r = -0.10$; $P < 0.01$) and SCS ($r = -0.18$; $P < 0.001$), respectively. The changing patterns of milk composition and related parameters in different lactation periods and parities could provide scientific reference for improving feeding management and nutritional supplementation for cows.

Key words: Holstein dairy cows, Lactation period, Milk composition, Parity.

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