Nationwide evaluation of quality and composition of colostrum on dairy farms in the United States

The objective of this study was to characterize the quality of maternal colostrum (MC) fed to newborn dairy calves in the United States and identify the proportion of MC that meets industry standards for IgG concentration and total plate count (TPC). Samples of MC (n = 827) were collected from 67 farms in 12 states between June and October 2010. Samples were collected from Holsteins (n = 494), Jerseys (n = 87), crossbred (n = 7), and unidentified dairy cattle (n = 239) from first (n = 49), second (n = 174), third or greater (n = 128), and unknown (n = 476) lactations. Samples were identified as fresh (n = 196), refrigerated (n = 152), or frozen (n = 479) before collection, as well as whether the sample was from an individual cow (n = 734) or pooled (n = 93). Concentration of IgG in MC ranged from <1 to 200 mg/mL, with a mean IgG concentration of 68.8 mg/mL (SD = 32.8). Almost 30% of MC contained <50 mg of IgG/mL. The IgG concentration increased with parity (42.4, 68.6, and 95.9 mg/mL in first, second, and third and later lactations, respectively). No differences in IgG concentration were observed among breeds or storage method; however, IgG was highest in samples collected in the Midwest and lowest in samples collected in the Southwest (79.7 vs. 64.3 mg/mL). Total plate count of samples ranged from 3.0 to 6.8 log10 cfu/mL, with a mean of 4.9 log10 cfu/mL (SD = 0.9) and was greater in samples collected in the Southeast compared with other regions of the country. Pooled samples had greater TPC than individual samples and refrigerated samples had greater TPC than frozen and fresh samples. Almost 43% of samples collected had TPC >100,000 cfu/mL, 16.9% of the samples had >1 million cfu/mL. Only 39.4% of the samples collected met industry recommendations for both IgG concentration and TPC. Almost 60% of MC on dairy farms is inadequate, and a large number of calves are at risk of failure of passive transfer or bacterial infections, or both. Also, these data indicate that regional differences exist in colostrum quality.

Sources:

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