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Milk production and composition in crossbred primiparous dairy cows fed different energy diets in the first 56 days of lactation

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Almost 70% of the milk produced in Brazil comes from crossbred cows, mainly Holstein-Gyr cows. However, there is a lack of information regarding milk and milk solids production by different Holstein x Gyr crosses, which is necessary for payments programs based on milk quality and composition (fat and protein content) that are being implanted in Brazil. The objective of the present study was to evaluate the milk yield and the content of fat and protein in the milk of Holstein-Gyr crossbred primiparous dairy cows fed two levels of energy during early lactation. The experiment was conducted in the experimental station of Embrapa Dairy Cattle in Coronel Pacheco, MG. Fifteen 3/4 Holstein-Gyr crossbred and thirteen 7/8 Holstein-Gyr crossbred primiparous dairy cows (initial body weight, 452.00 ± 37.88 kg; initial BCS, 3.18 ± 0.27) were randomly assigned to two treatments after calving: fed at high level of energy (HE: 1.93 Mcal/ kg of net energy for lactation and 0.168 kg of crude protein/ kg) or fed at low level of energy (LE: 1.68 Mcal / kg of net energy for lactation and 0.170 kg of crude protein/ kg). The diets were based on corn silage, grounded corn and soybean meal. The cows were milked twice a day and the milk yield was registered daily using infrared electronic sensors in the milk machine. Milk samples were collected weekly and analyzed in the Milk Quality Laboratory of Embrapa Dairy Cattle. The milk content of fat, protein and lactose was determined by infrared spectroscopy (Bentley Combi System 2300®, Bentley Instruments Inc., 2007). The milk yield, the energy corrected milk yield (3.2% protein and 3.5% fat) and the fat and protein content of the milk were evaluated. The data was submitted to ANOVA using the proc GLM of SAS. The fixed effects of diet, cross and their interaction were considered. The means were compared using the Student's t test (P<0.05). Primiparous cows fed high energy produced less (P < 0.05) milk than low energy fed cows (19.56 ± 0.37 and 21.25 ± 0.33 kg, respectively). However, the diet energy level affected the milk composition. Cows fed at high energy level produced milk with more (P < 0.05) fat and protein content (4.21 ± 0.11% fat and 3.10 ± 0.03 % protein) than cows fed at low level of energy (3.82 ± 0.09 % fat and 2.85 ± 0.03 % protein). The cross affected the percentage of protein in the milk. The 3/4 Holstein-Gyr primiparous cows produced milk with more (P < 0.05) protein (3.08 ± 0.03) than the 7/8 Holstein-Gyr primiparous cows (2.88 ± 0.03). There was no difference (P > 0.05) in the energy corrected milk yield that was 19.69 ± 0.28 kg/day. The results indicate differences in milk composition among the crosses that can be associated with a more severe negative energy balance in the 7/8 Holstein-Gyr cows.

Keywords: energy corrected milk, crosses, protein, fat

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