

Effects of Lactation Stage on the Nutrient Content of Milk from Holstein-Friesian X Sahiwal Cows (*Bos taurus* X *Bos indicus*)

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Abstract

The study aimed to determine the effects of lactation period on milk nutrient contents. Daily feed consumption, milk yield, and body condition score were collected from eight (8) Holstein-Friesian x Sahiwal cows every 28 days from 14 days post calving to 210 days of lactation. The amount of roughage grazed daily by the cows was estimated using the Quadrat method. Milk samples were collected during the same period to estimate milk fat and protein contents as well as protein profile. Results revealed that cows reached peak milk production at six (6) to 10 weeks postpartum, and started to decrease until the end of mid-stage (30 weeks postpartum). Fat concentration was high ($3.25 \pm 0.29\%$) at the beginning of lactation, then decreased ($2.77 \pm 0.34\%$) from the 6th to the 10th weeks, but tends to rise ($2.89 \pm 0.54\%$) again until the end of mid-stage. Protein concentration ($3.38 \pm 0.18\%$) was more stable than fat ($3.13 \pm 0.56\%$). Body condition score ($4.20 \pm 0.33\%$) did not considerably change through the early to mid-stage of lactation. There was a strong negative correlation between milk yield and crude fat ($r=0.83$, $P=0.010$) and protein ($r=0.65$). A very strong positive relationship was found between BCS and crude fat ($r=0.90$, $P=0.002$) and crude protein ($r=0.90$, $P=0.002$). The result of the study would be beneficial for dairy farmers in tropical setting and suggests that lactation periods affect milk, fat, protein, and carbohydrate yield, protein profile, and BCS. Good quality milk is vital for dairy producers to attain optimal income and better public health.