

Relationships between blood insulin, glucose and non-esterified fatty acids during the breeding period with days open in Holstein cows fed with high-starch rations

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Abstract

High starch (glucogenic, insulinogenic) rations are used for long periods during lactation because of their positive effect on milk production. Also, during the first weeks of lactation, they can improve fertility through preventing severe declines in blood glucose and insulin levels and modifying the level of non-esterified fatty acids (NEFA). However, it has been said that high starch rations may have negative effects on fertility if they are used after the termination of negative energy balance during the breeding period of the cows. In this study, changes in the plasma concentrations of insulin, glucose and NEFA were correlations of the measured parameters with days open of the cows were also assessed. Thirty lactating cows with a voluntary waiting period of 50 days were sampled for blood on days 60, 90 and 120 of lactation. Insulin increased through the study and had higher concentrations on days 90 and 120 compared to day 60. Glucose level decreased during the study and its concentration was lower on day 120 compared to days 60. There was an increasing trend in NEFA concentrations during the study period so that it had higher concentrations on days 90 and 120 compared to day 60. Insulin showed a negative correlation with glucose and a positive correlation with NEFA during the study. There was no correlation between the measured parameters and days open of the cows. Blood insulin concentration may increase in mid-lactation cows with high-starch rations but affection of fertility by high levels of insulin cannot be concluded.

Key words: Starch, Fertility, Insulin, Glucose, NEFA

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