

Effect of Nutrition on Conception Rate in Dairy Cows after Ovulation Synchronization and Timed Insemination

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Introduction

Nutrition is the most important factor affecting conception rate after artificial insemination in dairy cows. Conception rate after ovulation synchronization and fixed-time insemination (OVS/TAI), could be improved if cows could be screened for poor nutrition before starting the protocol. This study evaluated relationships between various nutritional parameters during dry and early-lactation periods and the conception rate after OVS/TAI.

Materials and Methods

A total of 39 Holstein-Friesian cows in their second to fifth lactation from two commercial dairy farms in Hokkaido were used for the experiment. All cows were body condition scored (BCS) 10 days before the due date, 28 to 35 days postpartum, 36 to 42 days postpartum, and the day of the first GnRH injection for OVS/TAI after 56 days postpartum. Blood sampling was also conducted on body condition scoring days for determination of blood glucose, plasma nonesterified fatty acids (NEFA),

hematocrit (Ht) value, blood urea nitrogen and plasma albumin.

Results and Conclusion

Conception rate after OVS/TAI in 39 cows was 43.6%. Significantly higher conception rates were seen in cows with BCS 3.75 to 4.0 (24 cows) 10 days before the due date, BCS 3 to 3.25 at 28 to 35 days postpartum and the first days for OVS/TAI protocol (23 and 16 cows), compared to cows with higher or lower BCS ($P < 0.05$). Conception rate was significantly higher ($P < 0.05$) in the 30 cows with plasma cholesterol concentration greater than 76 mg 10 days before the due date, 33 cows with blood glucose levels of 40 mg/dl or higher, and 27 cows with Ht values of 30% or higher at 28 to 35 days postpartum, compared with the other cows showing the lower values. The results indicate that BCS during dry and early-lactation periods provides useful information for screening cows with over- and under-nutrition which may have poor conception rates after OVS/TAI. Some blood parameters, including total cholesterol during the dry period and blood glucose and Ht one month postpartum, may also be related to reproductive performance.