



A046 Folliculogenesis, Oogenesis and Ovulation

### Effect of IGF-1 SnaBI polymorphism on reproductive parameters and metabolic parameters in dairy cows

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**Keywords:** fertility, IGF, Snp.

Insulin-like growth factor 1 (IGF-1) is associated with increased follicular estradiol production, stimulating the return of postpartum cyclicity (Butler et al., 2004). Therefore, it is possible that genetic variants of the IGF-1 gene can improve reproductive efficiency of postpartum cows. The aim of this study was to evaluate the effect of polymorphisms in the IGF-1 gene on reproductive parameters, and milk production of Holstein dairy cows. Genotyping was performed by electrophoresis of the PCR product after digestion with the enzyme SnaBI. Holstein cows (n=75) from 21 days prepartum up to 210 days in milk (DIM) were used in the study. These cows were submitted to an OvSynch-TAI protocol at 55 DIM, and the protocol was repeated in cows diagnosed as non-pregnant at 30 and 60 days after AI. Milk samples were collected twice per week for determining ovulation. Progesterone levels above 1 ng/mL in two consecutive samples indicated ovulation. Days from calving to first ovulation (CFO) and the calving to conception interval (CCI) were evaluated. Serum concentrations of IGF-1 and  $\beta$ -hydroxybutyrate (BHBA) were measured in samples collected at -21, 0, 7, 21 and 60 DIM. Data were analyzed using the GLM procedure of SAS. Genotype distribution was 14.7% for the TT genotype, 48% for CT and 37.3% for CC. Circulating IGF-1 levels were  $79.2 \pm 9.9$ ,  $66.5 \pm 5.2$  and  $56.6 \pm 5.9$  ng/ml for TT, TC and CC genotypes, respectively ( $P=0.05$ ). The CFO interval for TT, TC and CC cows was  $19.9 \pm 4.2$ ,  $30.6 \pm 2.3$  and  $30.4 \pm 2.5$  days, respectively, indicating a shorter interval ( $P<0.05$ ) for TT cows, which had the highest levels of IGF-I. A linear effect ( $P<0.05$ ) was observed among genotypes for the CCI, which was  $76.9 \pm 12.6$ ,  $96.9 \pm 6.8$  and  $111.7 \pm 7.8$  for TT, CT and CC, respectively. Cows from the TT genotype had a shorter CCI that may be associated with earlier return to postpartum cyclicity and higher serum IGF-I levels. The TT cows had lower serum BHBA values than cows with TC and CC genotypes,  $5.0 \pm 1.4$ ,  $8.2 \pm 0.7$  and  $8.1 \pm 0.8$  mg/dL ( $P<0.05$ ), respectively. Milk production was not different between groups ( $P>0.05$ ). In conclusion, the IGF-1 SnaBI polymorphism (TT) was associated with reduced CFO and CCI in dairy cows.