

21. PLASMA CONCENTRATIONS OF INSULIN-LIKE GROWTH FACTOR-I (IGF-I) AND RESUMPTION OF CYCLICITY IN PASTURE-FED DAIRY COWS

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Low plasma concentrations of IGF-I in early lactation have been associated with extended periods of calving to first ovulation in dairy cows (1). The objectives of this study were to compare plasma concentrations of IGF-I in cycling and anoestrous Holstein-Friesian (HF) cows and to establish any relationship between these concentrations and intervals from calving to first ovulation. Experiments 1 and 2 were conducted in 2001 and 2002. Before the AI program commenced in 2001, 23 of the 72 cows had >1 oestrous cycle, 26 had only 1 cycle, 10 cows ovulated but did not display signs of oestrus and 13 cows remained anovulatory. Year 2 included 30 cows from Year 1 that cycled early (12), late (12) or very late (6). Plasma concentrations of IGF-I were measured at calving, and at 1, 5 and 10 weeks into lactation with an ELISA. Experiment 3 involved 40 cycling and 30 anoestrus HF cows. Plasma concentrations of IGF-I were measured on Days 0 (day of insemination), 6, 12 and 18. In Experiment 1, cycling cows had higher ($P<0.01$). mean plasma concentrations of IGF-I than anoestrous cows; concentrations ranged from 48.8 ± 5.9 to 68.5 ± 4.4 ng/mL for the anoestrous and cycling cows respectively. Cows that were anovulatory had a longer interval from calving to first ovulation than the other three groups (76.5 ± 2.5 v. 39.9 ± 2.9 days, $P<0.001$). Early cycling cows in Experiment 2, had higher plasma concentrations of IGF-I compared to the very late cycling cows (96.5 ± 10.9 v. 51.4 ± 15.4 ng/mL, $P<0.05$). In Experiment 3, plasma concentrations of IGF-I in cycling cows were higher compared to anoestrous cows (76.50 ± 3.85 v. 60.30 ± 4.4 ng/mL, $P<0.01$). Cows with low IGF-I concentrations in early lactation are at greater risk of experiencing extended intervals from calving to first ovulation and of not showing signs of oestrus at that ovulation.

(1) Gong J.G. (2002) *Domest. Anim. Endocrinol.* **23**: 229–241.