18. ALTERED LUTEAL FUNCTION FOLLOWING INDUCED OVULATION IN DAIRY CATTLE

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Oestradiol benzoate (ODB) and gonadotrophin-releasing hormone (GnRH) are two drugs commonly used to induce ovulation in cattle. Evidence suggests that luteal function may be compromised following induced ovulation (1). When Segwagwe (2) used GnRH or ODB to induce ovulation a decreased plasma progesterone concentration occurred as compared to spontaneously ovulating animals. The aim of the present experiment was to examine CL size and concentrations of progesterone in plasma and luteal tissue in cows that were induced to ovulate or ovulated spontaneously. Oestrus was synchronised in 21 non-lactating dairy cows and ovulations were either spontaneous (control), or induced with GnRH (GnRH) or oestradiol benzoate (ODB). The protocol was repeated three times in a cross-over design so that every cow received each of the three treatments. Luteal cross sectional area was measured daily after behavioural oestrus (day 0) and blood samples were collected every second day. On day 12, a luteal biopsy sample was collected to measure luteal progesterone concentration. Higher concentrations of progesterone in plasma were measured on days 4 ($P<0.05$) and 10 ($P<0.01$) when ODB was used to induce ovulation as compared with GnRH or no ovulatory treatment (0.9 ± 0.02, 0.6 ± 0.02 and 0.5 ± 0.02 ng/mL; and 5.3 ± 0.31, 4.0 ± 0.31 and 3.6 ± 0.31 ng/mL for ODB, GnRH and control respectively). The increase from day 4 to day 10 was also larger (4.5 ± 0.29, 3.4 ± 0.29 and 3.1 ± 0.29 ng/mL, for ODB, GnRH and control respectively) ($P<0.01$). Luteal cross-sectional area was not affected by inducing ovulation since CL size did not differ between treatments at any time point ($P>0.4$). The related trends in progesterone concentrations in luteal tissue (56.8 ± 6.01, 49.6 ± 6.03 and 44.6 ± 6.01 ng/mg for ODB, GnRH and control respectively) were not statistically significant ($P=0.5$). Induction of ovulation with ODB was associated with increased plasma progesterone concentrations that could not be related to luteal progesterone concentrations or CL size.

(1) Lucy and Stevenson (1986) *Biol. Reprod.* **35**: 300–311. (2) Segwagwe (2001) MVSc Thesis, University of Melbourne.

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