

RESEARCH NOTE

THE EFFECT OF A GnRh INJECTION AT ARTIFICIAL INSEMINATION ON CONCEPTION IN DAIRY CATTLE

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J.M. van der Westhuysen*

Department of Human and Animal Physiology, University of Stellenbosch, 7600

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The asynchronous occurrence of oestrus and ovulation in cattle has been studied as a cause of failure to conceive (Van Rensburg & De Vos, 1961). These workers reported that even when oestrus and ovulation occur regularly in cows, abnormal time relationships and delayed ovulations may cause conception failure. More recently, the determination of the position of the luteinising hormone (LH) peak relative to oestrus has proved that a lack of synchronisation of the LH peak and oestrus do occur (Hale, 1974; Coetzer, 1979). Since LH release and ovulation can be triggered during oestrus by the injection of GnRh (Humke & Zuber, 1977) these experiments were planned to investigate the use of GnRh as a means of improving oestrus-ovulation time relationships and thus conception to artificial insemination (AI) in cattle.

In the experiment 164 Friesland heifers were allocated to the following treatment groups:

- (1) Natural handmating at normal oestrus (26 heifers);
- (2) AI at normal oestrus (62 heifers);
- (3) AI at an oestrus synchronised by administering two injections of prostaglandin $F_2\alpha$ (Lutalyse; Upjohn's), 11 days apart (32 heifers);
- (4) AI and the concomitant injection of 20 μ g GnRh (Receptal; Hoechst) at an oestrus synchronised by administering two injections of prostaglandin $F_2\alpha$ 11 days apart (44 heifers).

All heifers were under continuous observation and AI or mating was performed within 12 hours following the onset of standing heat.

The results of this experiment are summarised in Table 1. Conception rates following natural mating were significantly ($P < 0.01$) higher than those following AI. However, the injection of GnRh at the synchronised oestrus increased the conception rate to AI by 13% ($P < 0.05$). This increase in conception rate suggests that the artificial stimulation of the LH surge favoured a more optimal AI/ovulation time relationship. However, the size of the benefit derived from this treatment may not justify its application on a herd basis. On the contrary, the injection of GnRh as therapeutic treatment in cows with a known history of poor conception (repeat breeders) is of far greater significance. For this reason, 17 lactating cows which had previously failed to conceive on at least three occasions when AI was performed, were treated with GnRh at AI between 16 and 24 weeks *post partum*. Of these cows 12 (70.6%) conceived. The average conception rate of the herd to first AI approximately 10-12 weeks *post partum* was 52%. Similar results have been reported by other workers (Humke & Zuber, 1977).

It is therefore concluded that although the injection of GnRh at the time of insemination improved conception rates, its main application lies in the therapeutic treatment of repeat breeder cows.

* Present address: S.A. Mohair Board, P.O. Box 2243, Port Elizabeth, 6056

Table 1

Conception rates in heifers treated with 25 mg Prostaglandin F₂^α, either with or without an injection of 20 µg GnRh at the time of artificial insemination in heifers

Group	1	2	3	4
	<i>Untreated</i> <i>Mated</i>	<i>AI</i>	<i>Lutalyse</i> <i>AI</i>	<i>Lutalyse and GnRh</i> <i>AI</i>
Number of heifers	26	62	32	44
Number which conceived at first oestrus (percentage in brackets)	23(88) ^a	30(48) ^b	17(53) ^b	29(66) ^{bc}
Number returning to service	—	32	15	15
Number which conceived at second oestrus (percentage in brackets)	—	25(78)	12(80)	12(80)

^{abc} Within each line, figures with the same superscript do not differ significantly from each other

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