Technical Bulletin

AgriHealth

Evaluating the efficacy of a new progesterone insert for anoestrus cows in NZ dairy herds

Background

The amount of progesterone contained within progesterone (P4) intravaginal inserts varies between inserts available in New Zealand (CIDR 1.38g, CueMate 1.56g, DIB-V 1.0g). The relationship between insert payload and the amount of progesterone absorbed, and therefore residual device progesterone, is not linear (Macmillan and Petersen 1993).

Progesterone inserts were initially developed when treatment programs for anoestrus cows had a significantly longer period of device insertion. For instance, the original CIDR contained 1.9g of P4. As modern programs only require device insertion for seven days, products with a lower payload of P4 have become widely used.

A study in cycling, lactating Holstein cows demonstrated no difference between treatments (CIDR 1.9g, CIDR 1.38g, Cue-Mate, DIB-V) in peak plasma progesterone levels or mean progesterone levels from insertion to day 7 (Bo et al. 2007). Another study in synchronised cycling Holsteins found no significant difference in serum P4 profiles between the 1.0 gram DIB-V and the 0.5 gram variant DIB-h (Videla et al. 2008).

Study Objectives

The aim of this study was to evaluate the reproductive outcomes in no visible oestrus (NVO) dairy cows treated with a progesterone insert containing 0.5g P4 compared with a progesterone insert containing 1g P4 as part of a P4 + GPG + eCG (DIB-Synch Plus) anoestrus cow treatment program.

Study Design

The Study enrolled 1002 spring calving lactating dairy cows from 16 commercial dairy herds throughout NZ. Enrolled cows had calved between 35 days and 105 days prior to the planned start of mating (PSM) and were free from clinical disease.

Cows had a heat detection aid (e.g. tail paint, Kamar® or similar) applied 5 weeks prior to PSM. Cows that had not exhibited signs of visible oestrus in the 25 days after application of the heat detection aid were enrolled. These cows were presented to the trial veterinarian by the dairy farmer as non-cycling (NVO) ten days prior to the planned start of mating.

All cows remained on their farm of origin throughout the study and were managed in accordance with generally accepted dairy farming practices.

Enrolled cows were randomly assigned to one of two treatment groups;

Group 1	DIB-Synch Plus (DIB-V 1g P4 insert)
Group 2	DIB-Synch Plus (DIB-h 0.5g P4 insert)

Cows were treated 10 days prior to PSM with 2mL Gonasyn (100µg gonadorelin) IM injection and with a DIB P4 Intravaginal insert (containing either 1g (DIB-V – group 1) or 0.5g (DIB-h – group 2) P4). On Day -3 the DIB was removed, and 2mL Cyclase (500µg cloprostenol) and 2mL Novormon eCG (400IU eCG) administered by IM injection. Cows were inseminated to observed heat from this time forward. On Day -1 all cows not yet inseminated were treated with 2mL Gonasyn IM. All cows not yet inseminated were inseminated on Day 0 (PSM) 16-20hrs after the 2nd gonadorelin injection.

Body condition score was estimated for all cows 10 days prior to PSM according to the Dairy NZ Body Condition Scoring System on a scale of 1-10 (DairyNZ, 2012). Also recorded for all cows were age, breed and last calving date.

All treated cows were pregnancy tested and the foetus aged.

Results

The cumulative pregnancy proportions (1-Survival Distribution Function) by treatment are shown in figure 1. There was no significant difference between treatment groups.

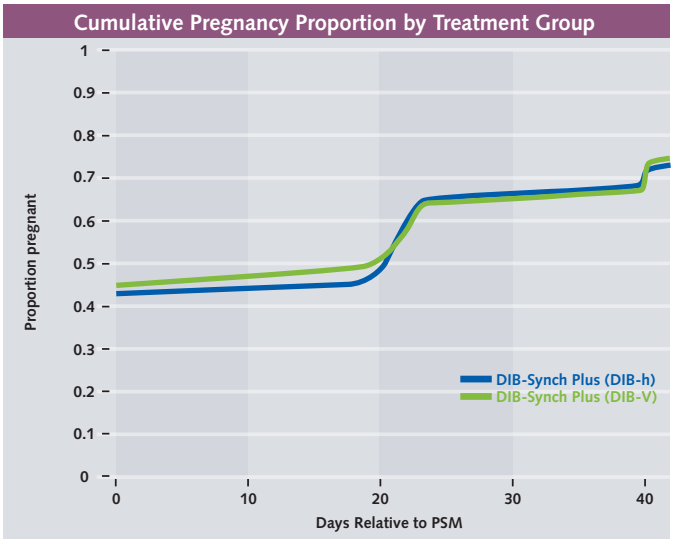

Figure 1. Cumulative Pregnancy Proportion by Treatment Group

The results are outlined in table one.

Table 1. Pregnancy results by treatment (no statistical significance)

		FTAI				28d				42d			
Treatment	Number	Propn. Preg	*Lower 95% CI*		*Upper 95% CI*	Propn.	*Lower 95% CI*		*Upper 95% CI*	Prop.n	*Lower 95% CI*		*Upper 95% CI*
Group 1. DIB Synch Plus (DIB-V)	511	0.45	*0.41*	-	*0.50*	0.65	*0.60*	-	*0.69*	0.75	*0.72*	-	*0.79*
Group 2. DIB Synch Plus (DIB-h)	491	0.43	*0.38*	-	*0.47*	0.65	*0.61*	-	*0.69*	0.74	*0.70*	-	*0.78*

Summary

The results of this study demonstrated that the DIB-h is non-inferior to the DIB-V in NZ non-cycling dairy cows.

The DIB-h product is a feasible option to use in a P4+GPG+eCG (DIB-Synch Plus) program in anoestrus dairy cows in NZ.

References

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