Comparing purulence and vaginitis associated with progesterone releasing inserts

Introduction

Intravaginal progesterone releasing inserts are part of treatment protocols for those cows not detected in oestrus preceding the start of the seasonal breeding program in New Zealand and other dairy industries (McDougall 2010).

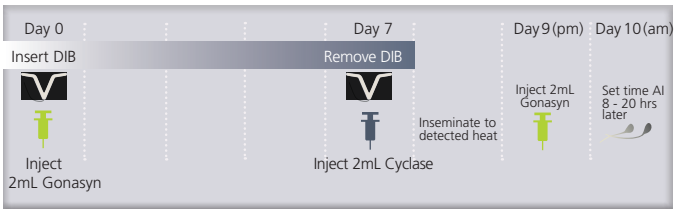
Placement of the inserts within the vagina for 7 days of the treatment protocol may potentially result in erosion of the vaginal mucosa at the point of contact with the tips of the wings. Additionally, the presence of the insert within the vagina may result in an inflammatory response.

New Zealand market research in 2011 determined that purulence associated with progesterone inserts was cited by farmers as a reason for not treating non-cycling dairy cows. Purulence flicked at device removal was cited by NZ dairy cattle veterinarians as an unpleasant part of treating anoestrous cows (AgriHealth data on file, 2011).The degree of inflammatory response and vaginal mucosal changes associated with 7 days of placement of two different intravaginal progesterone releasing inserts has been assessed and quantified.

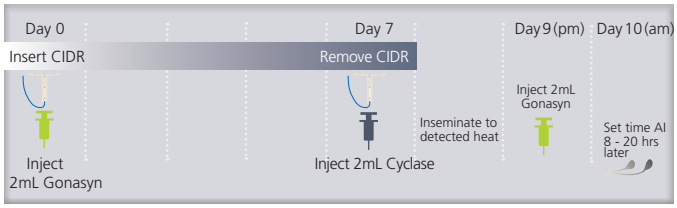
Study design

Cows from 2 spring-calving, pasture-fed dairy herds calved at least 21 days and not been detected in oestrus by 10 days before Planned Start of Mating were treated with either DIB-Synch or CIDR-Synch programs. Sequentially presented cows were randomly assigned to insertion of an intravaginal progesterone releasing device CIDR (n = 110) or DIB (n = 220). The progesterone releasing devices were inserted coincident with the initial GnRH treatment and removed at the time of the PG treatment, i.e. they were within the vagina for a period of 7 days.

1. DIB-Synch (DIB-V + GPG)



2. CIDR-Synch (CIDR + GPG)



At the time of insert removal the amount of grossly evident purulent material on the insert was scored on a 0 to 2 scale (i.e. 0 = no purulent material, 1= flecks of purulent material and 2 = large amounts of purulent material).

Subsequently, the vulva lips were wiped with a paper towel moistened with iodine, a vaginoscope was inserted into the vagina and the vaginal wall was illuminated with a torch. The vaginal wall was scored on a 0 = no visible lesions, 1 = superficial lesions, and 2 = erosions of the vaginal mucosa scale (Walsh et al 2008). All examinations were undertaken by one skilled veterinarian.

Results

Purulence

The proportion of inserts with purulence was lower for the DIB than the CIDR insert (0.55 (SE = 0.04) vs. 0.87 (SE = 0.04; p<0.001).

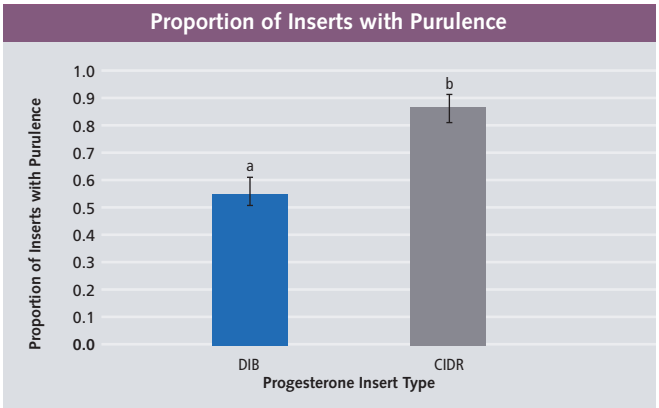


Fig 1. The proportion of DIB vs CIDR progesterone inserts which had purulence. Columns with different superscripts differ at P<0.001 .

The purulence score was highest on devices withdrawn from those cows calved the longest compared to those calved the shortest (Figure 2).

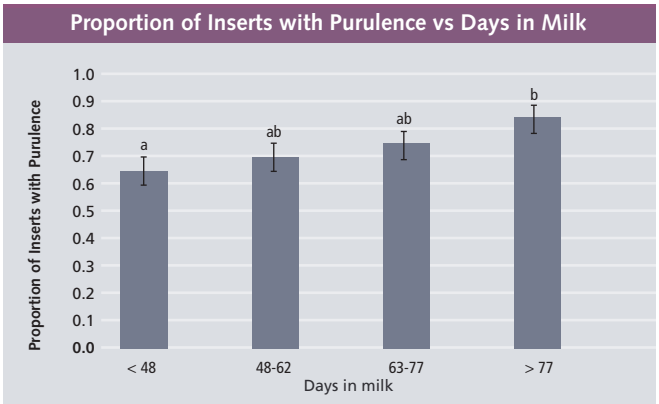


Figure 2. The proportion (SE) of inserts which had purulence vs days in milk. Columns with different superscripts differ at P<0.05.

Once days in milk, herd and body condition score were taken into account, the purulence of the insert was not associated with conception rate to first service (p = 0.24).

Vaginal score

There was no difference in the proportion of cows with vaginal score of 1 between CIDR and DIB treated cows (8/110 (7.3%) vs. 19/216 (8.8%), p = 0.64). No cow was found to have a vaginal score of 2 (i.e. vaginal erosions).

	Vaginal score			
Group	0	1	total cows	% +ve
CIDR	102	8	110	7.3
DIB	197	19	216	8.8

Table 1. The number of cows with a vaginal score of 0 (i.e. no visible lesions) or 1 (superficial lesions) following device removal following 7 days of placement by treatment.

Discussion

The results of this study showed over half of the DIB inserts and well over three quarters of the CIDR inserts had grossly purulent material adhered to them upon removal ($p<0.001$). The difference amongst inserts may be a function of the shape of the device or of the surface characteristics. The degree of purulence was not associated with conception rate to first service (having adjusted for age and days in milk) demonstrating that presence of purulence on the inserts is not a predictor of subsequent reproductive performance.

No cow had significant erosions of the vaginal mucosa when assessed 7 days after progesterone device insertion. Less than 10% of cows had any degree of vaginal mucosa change. The lesions were minor with some limited erythema present.

Within the limited power of this study, there were no differences found among the two intravaginal progesterone releasing inserts in the degree of vaginal erosion (vaginal score), and no apparent association between vaginal score and first serve conception rate.

The lack of association between vaginal and purulence scores and the first service conception rate may be related to the fact that these measures are associated with the insert itself (which sits in the vagina) and the vaginal wall, rather than the uterus. While it may be hypothesised that inflammatory change in the vagina may influence the uterine environment, there was no evidence of such an effect in this study.

Conclusion

In conclusion, there was less purulent material adhered to the DIB, than to the CIDR insert. There was no difference between the two intravaginal inserts in terms of vaginal mucosa erosion score. These data suggest that while presence of an intravaginal insert may result in vaginitis and a low prevalence of grossly evident vaginal wall change, this does not affect subsequent fertility of treated cows.

References

AgriHealth NZ Ltd, 2011. DIB market research report for AgriHealth. Data on file.

McDougall S., 2010. Effects of treatment of anestrous dairy cows with gonadotropin releasing hormone, prostaglandin and progesterone. J. Dairy Sci 93, 1944-59.

McDougall S., 2011. Prevalance of vaginitis and degree of purulent material on two intravaginal progesterone releasing devices. Study Report.

Walsh RB, LeBlanc SB, Vernooy E, Leslie KE, 2008. Safety of a progesterone-releasing intravaginal device as assessed from vaginal mucosal integrity and indicators of systemic inflammation in postpartum dairy cows. Can J Vet Res 72, 43-9.

Products used in the studies

DIB-V (A10319)

Gonasyn (gonadorelin) (A10642, RVM)

Cyclase (cloprostenol) (A10490, RVM)

CIDR (A04559) – Registered to Zoetis NZ Ltd

DIB progesterone inserts, Gonasyn and Cyclase are manufactured by Syntex S.A. These products are marketed in New Zealand by registrant AgriHealth NZ Ltd.

This study was conducted under the approval of the Ruakura Animal Ethics Committee.

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