CAN CIDRs BE REUSED TO SYNCHRONIZE ESTRUS IN CATTLE?

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TAKE HOME MESSAGES

- For intra-vaginal progesterone releasing devices to be effective in synchronizing estrus in cattle, they must increase progesterone in blood. Our study showed that reused CIDRs do not increase serum progesterone and therefore are ineffective in synchronizing estrus in cattle.

- Reused CIDRs have a higher loss rate and are more strongly associated with vaginitis than new CIDRs.

- There was no statistical association between days open, days in milk, lactation number, milk weight and mature equivalent milk production and serum progesterone levels.

BACKGROUND

To reduce the costs of synchronizing estrus, cattle producers have reused a popular intra-vaginal progesterone releasing device (CIDR) in heifers and cows since CIDRs were first brought on the market in 2001. Despite this common management practice, there was little published scientific evidence whether this practice was effective as an aid in synchronizing estrus.

EXPERIMENTAL PROCEDURE

Adult Holstein-Freisian dairy cows were studied. Over a three week period, non-pregnant, lactating cows that had normal reproductive tracts, a corpus luteum diagnosed via palpation per rectum and were in good overall health (no mastitis, lameness, systemic illnesses) were selected for participation in the study. Cows ranged in age from two to seven years, from 44 to 285 days in milk and from 46 to 121 lb average daily milk production.

Forty cows were enrolled in three cohorts. Cows in each cohort followed the standard study protocol of three consecutive trials, each lasting approximately thirteen days each, for a total study protocol of forty days per cow. Prior to the start of each trial, each cow received 5 ml of dinoprost (Lutalyse, Pfizer) intramuscularly. Subsequent serum samples for progesterone determination occurred on approximately the same day after dinoprost administration for each of the three 13-day trials.

We compared baseline serum progesterone concentrations in healthy lactating dairy cows to serum progesterone concentrations following insertion of new intra-vaginal progesterone releasing devices (1.38 g CIDR) and to concentrations following reuse of the same intra-vaginal progesterone releasing devices in the same cows.
RESULTS
Paired T tests were used to compare blood sample results for differences in mean progesterone concentrations between each of the three trials. Comparison of means between sample series T1 and T2 demonstrated a statistically significant increase (p = 0.0028) in serum progesterone consistent with the exogenous source of progesterone from the intravaginal insertion of new CIDRs. Comparison of sample series T2 and T3 indicated a statistically significant decrease (p = 0.0009) in serum progesterone when comparing samples from cows that received a new CIDR versus the same cows receiving the reused CIDRs. Comparison of sample series T1 and T3 showed no statistically significant difference (p = 0.9494) in serum progesterone concentrations when comparing cows with no CIDRs inserted to the same cows with reused CIDRs. (Table 1)

Table 1: Paired t-test comparison of means of serum progesterone concentrations for trials one, two and three

<table>
<thead>
<tr>
<th>Comparisons</th>
<th>Mean Difference</th>
<th>95% C.I.</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial 1 vs. trial 2*</td>
<td>-1.3730</td>
<td>-2.2392 to -0.5066</td>
<td>0.0028</td>
</tr>
<tr>
<td>Trial 2 vs. trial 3*</td>
<td>1.3946</td>
<td>0.3864 to 0.6109</td>
<td>0.0009</td>
</tr>
<tr>
<td>Trial 1 vs. trial 3</td>
<td>0.0216</td>
<td>-0.6649 to 0.7081</td>
<td>0.9494</td>
</tr>
</tbody>
</table>

*Statistically Significance at \( \alpha = 0.05 \)

CONCLUSIONS
Under the conditions of the study, there was a significant decrease in serum progesterone concentrations following insertion of reused CIDRs when compared to serum progesterone concentrations following insertion of new CIDRs. Serum progesterone concentrations associated with reused CIDRs were statistically similar to baseline progesterone concentrations obtained from study cows before new CIDR insertion. The results of this study indicate that there was either significant loss of progesterone in the CIDR insert after one use or there was decreased absorption of progesterone available from the reused CIDRs. Based on the findings of the current study, reuse of 1.38 g CIDRs to aid in synchronization of estrus in lactating dairy cattle cannot be recommended.