

APPLICATION OF A NEW COW-SIDE LH ASSAY Predi'Bov® FOR DETERMINING OPTIMUM AI INTERVALS IN SUPEROVULATED BEEF DONORS IN THE USA: A PRELIMINARY STUDY

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INTRODUCTION

- Successful superovulation and embryo collection require donors to be managed for precise insemination intervals. At times, determinations of these intervals can become difficult because of estrus detection subjectivity.
- The objective of this study was to determine the feasibility of performing a rapid cow-side LH assay (Predi'Bov®; ReproPharm, SA., Nouzilly, France) on superovulated donors with emphasis on determining how to use the results in a commercial program to time inseminations.

MATERIALS and METHODS

- Beef donors (n=52) were synchronized with a CIDR and Combo (25 mg of progesterone and 2.5 mg of estradiol 17β).
- Superstimulation was induced using 150–300 mg of Folltropin-V® through 7 decreasing doses at 12-h intervals.
- Standing estrus was determined by HeatWatch®.

- Blood samples were collected starting at CIDR removal, continuing every 6 h until a positive Predi'Bov® test was acquired or 36 h after CIDR removal.
- Whole blood was submitted to a 3-step procedure using a tube-stick applicator to determine whether increased concentrations of LH were present.
- Stick applicators that turned blue were positive for increased concentrations of LH.

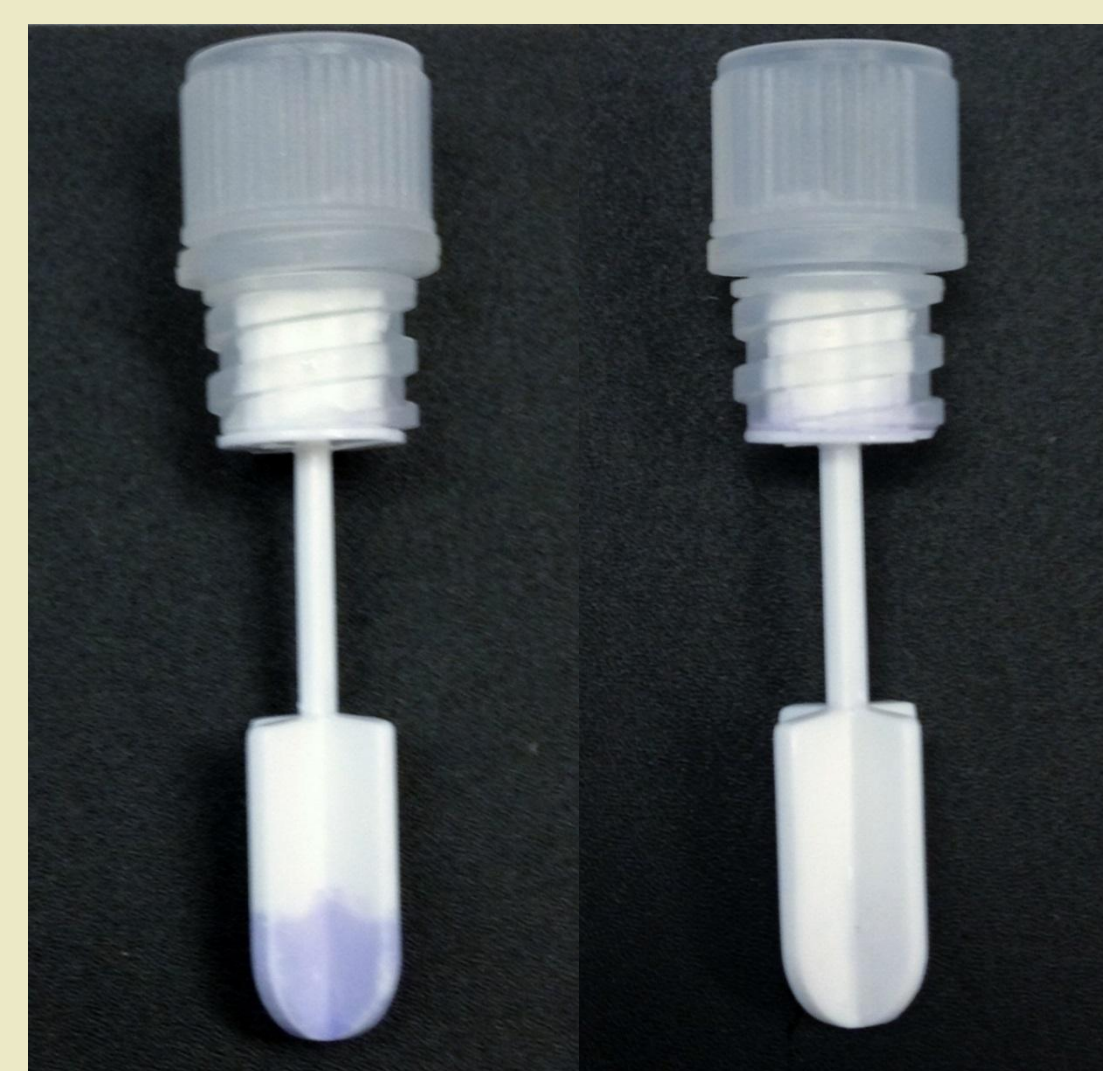


Fig. 1. Positive(Left) and Negative (Right) Predi'Bov® stick applicators

- Donors were artificially inseminated 12 and 24 h after a positive test.
- Embryos were non-surgically collected 7 days after insemination.

CONCLUSIONS

- Predi'Bov® cow-side usage could offer commercial utility when identifying estrus as difficult or nonexistent.
- Increased detection of ovulation could help to identify optimal AI intervals, thereby increasing embryo production and limiting the use of expensive semen for desired donors.

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RESULTS

- 80% (42/52) of positive tests occurred within 12 to 24-h after CIDR removal.
- 40% (21/52) of positive tests occurred 18-h after CIDR removal.

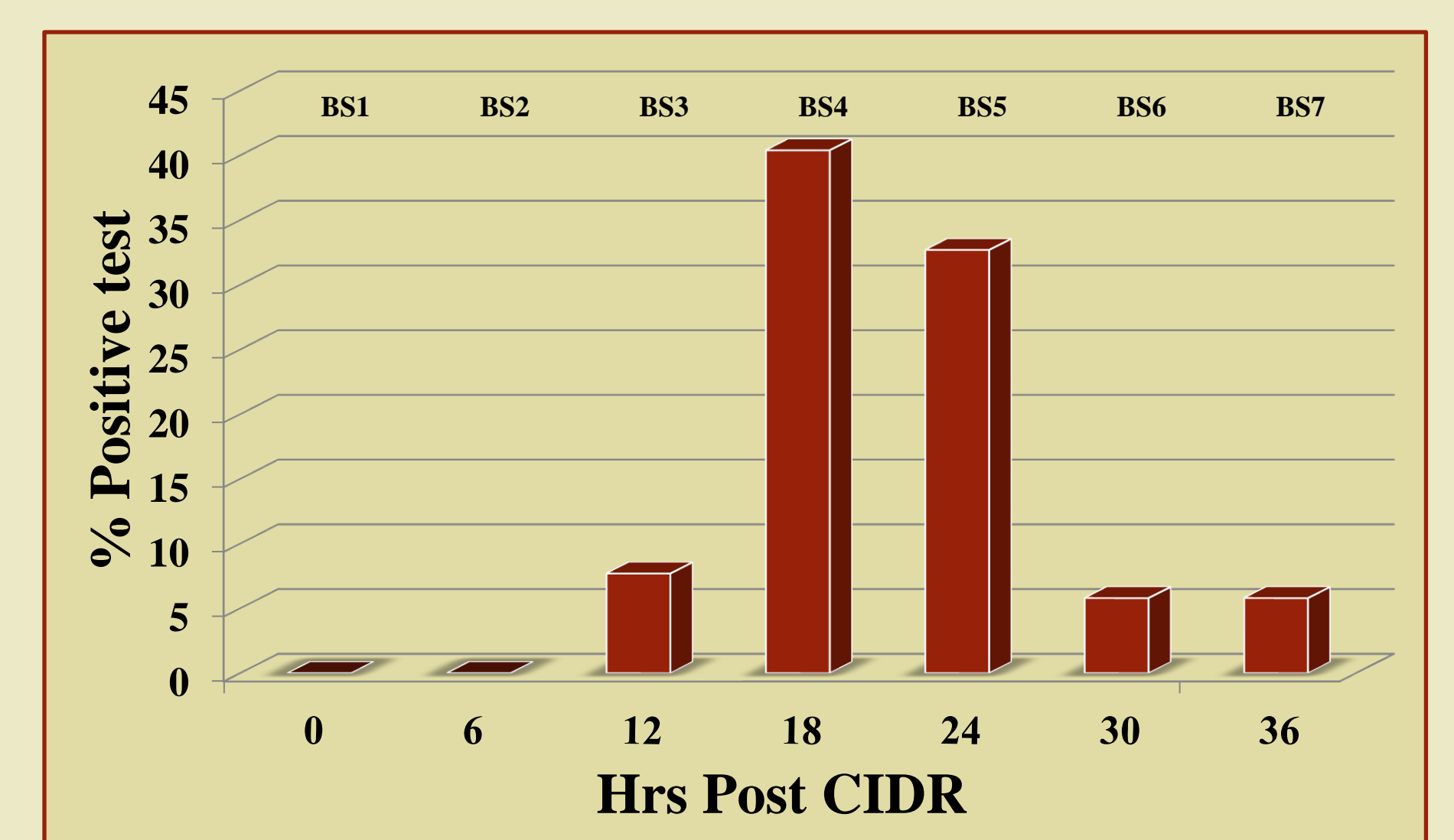


Fig. 2. Percentage of positive test in hours post - CIDR removal
BS = Blood Sample

- A total of 428 viable embryos were collected (8.2 ± 0.84/donor) from all donors.
- Donors (n=41) that exhibited estrus and yielded a positive test produced 364 viable embryos (8.4 ± 0.94/donor).
- Donors (n=7) exhibiting silent estrus that yielded a positive test produced 47 embryos (6.7 ± 2.23/donor).
- Three donors exhibited estrus and never produced a positive test but contributed 17 viable embryos (5.6 ± 2.84) to the total.
- One donor did not exhibit estrus, produce a positive test or viable embryos.

| Day | Hour | Procedure |
|-----|------|------------------------|
| 0 | A.M. | CIDR+Combo |
| 4-5 | A.M. | FSH |
| 4-5 | P.M. | FSH |
| 6 | A.M. | FSH, PGF _{2α} |
| 6 | P.M. | FSH, PGF _{2α} |
| 7 | A.M. | FSH, CIDR-out, BS1 |
| 7 | P.M. | BS2, BS3 |
| 8 | A.M. | BS4, BS5 |
| 8 | P.M. | BS6, BS7 |

Table 1. Protocol timeline
BS = Blood Sample

| Donors (n) | Total Viable Embryos | Total Viable /Donor (Mean±S.E.) |
|--|----------------------|---------------------------------|
| Positive test + Detected estrus (41) | 346 | 8.4 ± 0.94 |
| Positive test + No estrus detected (7) | 47 | 6.7 ± 2.23 |
| Negative test + Detected estrus (3) | 17 | 5.6 ± 2.84 |
| Negative test + No estrus detected (1) | 0 | 0 |
| Total (52) | 428 | 8.2 ± 0.84 |

Table 2. Embryo production by donor category