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# EFFICACY OF LUPROSTIOL FOR ESTRUS SYNCHRONIZATION IN BRAHMAN COWS AND HEIFERS

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## SUMMARY

Several prostaglandins are available for use in estrus synchronization of cattle. Currently, there is an interest in determining the effectiveness of the prostaglandins in *Bos indicus* as well as *Bos taurus* cattle. The results of this study using Luprostiol, a new prostaglandin analog, on Brahman cattle are similar to those of studies done with some of the other prostaglandins and Brahman cattle. The current study indicated that Luprostiol doses above 3.75 mg will synchronize estrus in Brahman cows and heifers at a rate comparable to Estrumate. Brahman heifers tended to respond better to the higher doses of Luprostiol than cows as far as synchrony was concerned. First service conception rate was suppressed at the higher doses used in both cows and heifers, but pregnancy rate was not affected by any dose of Luprostiol used. The data indicate that 7.5 mg of Luprostiol was the appropriate dose for estrus synchronization in Brahman cattle.

## OBJECTIVE

This study was designed to evaluate the efficacy of Luprostiol for estrus synchronization in Brahman cows and heifers.

## PROCEDURES

Seventy-four Brahman cows and 56 Brahman heifers were used in this study. Forty-four of the cows were nursing calves at the time of the study. The cattle were randomly assigned to receive 1 of 5 doses of Luprostiol, or 1 dose of Estrumate in an intramuscular injection (Table 1). Cattle were observed for estrus with the aid of sterile marker bulls for 2 consecutive estrous cycles before being assigned to a treatment group. Cattle were injected on day 8 or 9 of the estrous cycle (estrus = day 0). After injection, observation for estrus was continued. All females were bred by artificial insemination (AI) 12 hours after the onset of standing estrus. All cows were bred using semen from an ejaculate of one bull, and all heifers were bred to

semen from an ejaculate of one other bull. Two AI technicians were distributed evenly across all dose and age groups to minimize technician effect. Observation of estrus was continued after breeding. All cattle were rectally palpated 45 days after breeding to determine pregnancy.

#### RESULTS

There was no difference in time to estrus after injection between cows and heifers, but all animals receiving 0 mg Luprostiol exhibited a longer time to estrus ( $P < .0001$ ) than animals receiving any other dose of Luprostiol or Estrumate (Figure 1). There was no difference in the proportion of cows and heifers in estrus by 120 hours after injection, but there was a difference between doses of Luprostiol (0, 3.75 mg < 7.5, 15.0, 30.0 mg and Estrumate;  $P < .0001$ ; Figure 2). Heifers tended to respond better to the higher doses of Luprostiol, which was similar to the response to other prostaglandin analog products that were studied in our laboratory. The cattle that came into estrus by 120 hours after injection will be referred to as Responders in the text and figures to follow. There was no effect of age on first service conception rate, but there was an effect of dose ( $P < .08$ ; Figure 3). The 7.5 mg dose groups had a greater first service conception rate than any other dose of Luprostiol except 0 mg and Estrumate. There was one Responder cow in the 0 mg dose group that became pregnant from the first AI. The higher doses of Luprostiol (15.0 and 30.0 mg) suppressed first service conception rate in both Responder cows and heifers. Pregnancy rate of Responder cows receiving 3.75 or 15.0 mg was less than heifers at these 2 doses. ( $P < .07$ ), but there were no differences at the other doses of Luprostiol or Estrumate (Figure 4).

TABLE 1. EXPERIMENTAL DESIGN FOR TREATMENTS

DOSE <sup>a</sup>	COWS	HEIFERS
0	12	9
3.75	14	9
7.50	13	9
15.0	12	10
30.0	12	10
ESTRUMATE	11	9
TOTAL	74	56

<sup>a</sup>Luprostiol = mg/2 ml propylene glycol, Estrumate = 500 ug

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FIGURE 1.

TIME TO ESTRUS AFTER INJECTION OF LUPROSTIOL

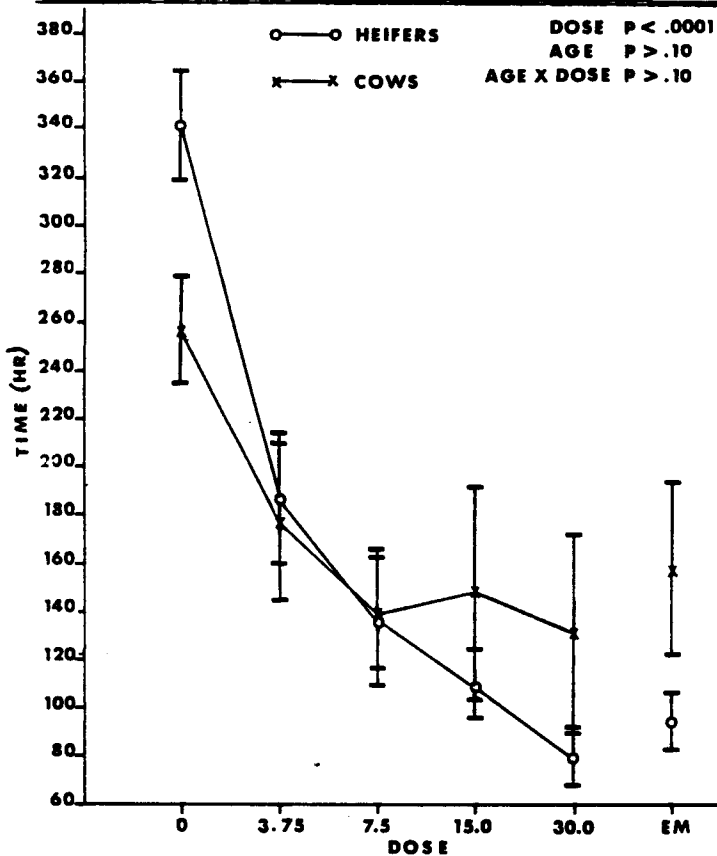


FIGURE 2.

PROPORTION OF CATTLE IN ESTRUS BY 120 HOURS

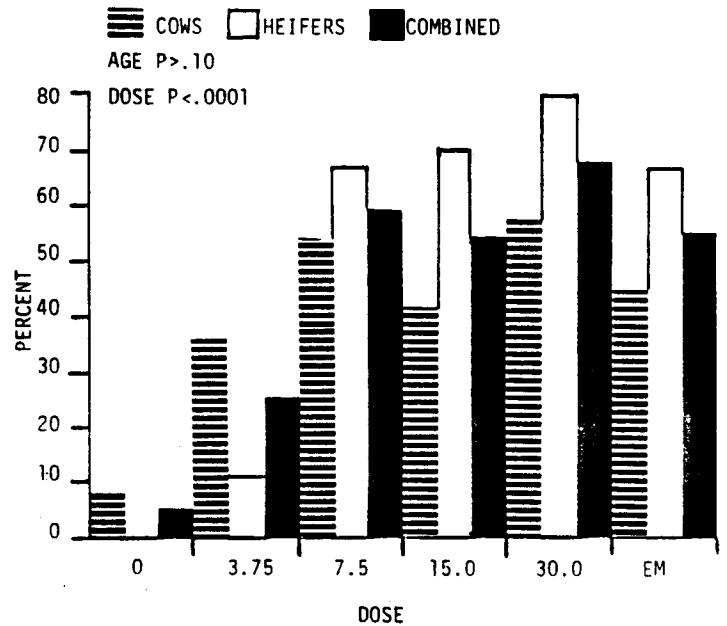


FIGURE 3.

FIRST SERVICE CONCEPTION RATE OF RESPONDER CATTLE

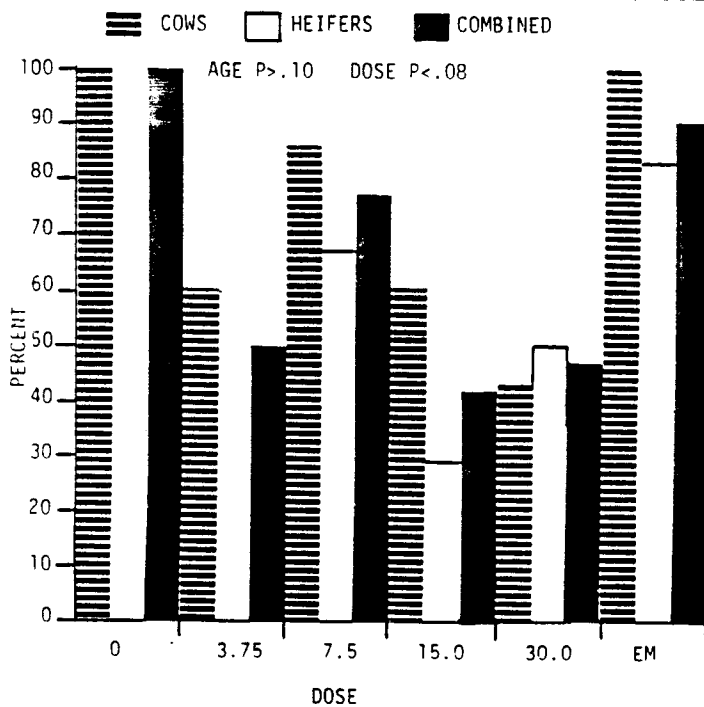


FIGURE 4.

PREGNANCY RATE OF RESPONDER CATTLE

