การบังคับเวลาเป็นสัดของวัวเนื้อเพื่อผสมเทียมด้วยเชื้อแช่แข็ง

Estrous Synchronization in Beef Cattle for Artificial Insemination with Frozen Semen[1]

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In the latter part of the last decade, attempts were made to bring many animals into heat during a short period of time for convenience in artificial insemination. It is obvious that if all the animals could be inseminated during a short period of a few days rather than a few animals each day for nearly a month, the task of getting the animals inseminated would be much simpler. The attempt to get the animals to come into estrus at one time is referred to as estrous synchronization.

This research is of real value where it is not convenient to keep an inseminator or frozen semen at a place for an extended period of time.

Hansel and Malven (1960) reported the result of their study with two groups of 22 and 10 Hereford cows. They were fed 968 mg./animal/day of medroxyprogesterone acetate for 10 days and then at the rate of 500 mg./animal/day for an additional 10 days. They found that 9 of the 22 animals in the first group came in heat on the third and fourth days after hormone termination and 7 of the 10 of the second group came in estrus on the third day. Five of the nine cows in estrus in the first group conceived after first service.

Nellor and Ahrenhold (1960) fed 0.6 mg. of 6-methyl-17-acetoxyprogesterone as a part of the ration per pound of body weight daily, by twice-a-day feeding, to a group of heifers. The result was that 80 percent of the heifers came in heat on the fifth and sixth days after the end of the hormone administration.

Sorensen and Foster (1960) investigated the effect of 6-methyl-17-acetoxyprogesterone on 100 Hereford heifers

1. A subproject of Kasetsart University/Hawaii University Contract Project No. 2, "Basic Study of Physiological and Economic Traits of the Thai Native Cattle."

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by feeding the hormone at the rate of 180 mg. daily for 18 days. They found that 75 percent of the heifers came in estrus within 72 hours after the last feeding and 44.6 percent conceived after the first service.

Collins et al. (1961) studied the effect of 6-methyl-17-acetoxyprogesterone by feeding with grain ration at the rate of 0.5 mg. per pound of body weight daily for twenty days to 36 dairy heifers. Thirtyfive heifers came in estrus within two to five days after the end of treatment. And 17 out of 30 heifers bred artificially became pregnant.

Hansel (1961) examined the effects on the reproductive performance of feeding 6-methyl-17-acetoxyprogesterone to 32 Hereford cows for a 20-day period at varying doses from 0.2 to 0.8 mg. per pound of body weight daily. It was found that 16 animals came in estrus on the third and fourth day after treatment. Twenty-nine of the 32 cows ovulated after the treatment. Cows were bred and 25 percent of them conceived to treatment service.

Nelms and Combs (1961) conducted three trials to investigate the effect of 6-methyl-17-acetoxyprogesterone. The first group of 10 beef cows was fed 0.8 mg. per pound of body weight daily for 15 days. It was found that 9 of the 10 cows came in heat on the third and fifth day after the hormone feeding ended. Six out of 10 calved. In the secone trial, they fed 200 mg. per day to 33 cows for 15 days. All cows came in heat on the second and third day. Fifteen cows were bred and 10 cows became pregnant. In the last trial, 60 heifers were fed 250 mg. per day for 14 days. And following the removal of the treatment, all heifers were inseminated during the third, fourth, and fifth day after the last treatment without observing for estrus. Forty percent of all heifers was diagnosed as pregnant.

Zimbelman (1961) fed 16 heifers with 0.5 mg. of 6-methyl-17-acetoxyprogesterone per pound of body weight daily, twice a day, for 20 days. Twelve (75 percent) of the sixteen came in heat within 48 to 84 hours after the last feeding. Thirteen heifers (81 percent) conceived with one or two services; one heifer did not come in heat but was inseminated at 96 hours after the termination and became pregnant.

This study was designed to evaluate the effects of 6-chloro-6-dehydro-7-α-acetoxyprogesterone in synchronizing estrus in *Bos indicus* and to study the possible use of frozen semen under unfavorable conditions.

MATERIALS AND METHOD

Two trials were conducted at the Tab Kwang Station. In the first trial, 50 cows (21 Native cows and 29 Zebu grade cows) were used. In the second trial 49 Native and Zebu grade cows were used.

The hormone feed premix used contained Chlormadinone acetate (6-chloro-6-dehydro-17-α-acetoxyprogesterone).

The hormone premix was mixed into corn and cob meal in the first trial and in rice bran in the second trial and fed to the animals once a day so that each animal received 10 mg. of hormone daily for 20 days.

RESULTS AND DISCUSSION

Table 1 shows that in the fiirst trial cows started to show signs of heat from the first day after the last day of treatment The largest number of animals came in heat on the sixth day. In ten days, 35 animals or 70 percent had been observed in heat. In the second trial, animals started to show signs of heat on the fourth day. The largest number of cows were observed in heat on the eighth day. In 11 days, a total of 20 cows or 53 percent had been observed in heat.

It is believed that the result of the second trial were not as good as the first because the animals not observed in heat during the first trial were included in the second, thus increasing the number of animals that for some reason were not showing signs of heat.

In the first trial 35 cows were inseminated artificially and 26 cows in the second trial. Table 2 shows that in the first trial, 34.3 percent of the cows did not return in heat after the first service and in the second trial 61.5 percent. However, in the first trial, only 4 out of 22 cows were pregnant; others came in heat later.

Table 1. *Estrus response to hormone treatment for the first and second trials.*

No. of days after last day of treatment	No. of cows coming in heat		Cumulative total number cows		Percentage of total number of cows	
	1st*	2nd**	1st	2nd	1st	2nd
1	1	–	1	–	2	–
2	2	–	3	–	6	–
3	2	–	5	–	10	–
4	–	3	5	3	10	6
5	3	–	8	3	16	6
6	18	3	26	6	52	12
7	8	–	34	6	68	12
8	–	14	34	20	68	41
9	–	3	34	23	68	47
10	1	–	35	23	70	47
11	–	3	–	26	–	53

*First trial

**Second trial

Table 2 *Artificial insemination results as expressed in 60-90 day nonreturn for the first and second trials.*

Services	Cows not returning in heat		Percentage of total	
	1st	2nd	1st	2nd
1st	12	16	34.3	61.5
2nd	7	6	20.0	23.0
3rd	3	2	8.3	7.7
Total	22	24	62.6	92.2

SUMMARY AND CONCLUSIONS

This preliminary study has shown that it is potentially possible to control estrus of *Bos indicus* cattle by the use of hormones. The 60 to 90 day non-return rate with artificial insemination was very reasonable. However, the pregnancy rate of the first trial was very disappointing; the second trial looks much better. It seems that someday in the future it will be possible to breed a group of cattle in a relatively short period of time making the field use of frozen semen practical. More work, however, has to be done to carry this work to an economically practical level.

สรุป

ผลการศึกษาครั้งนี้แสดงว่า การควบคุมการเป็นสัดของแม่วัวนั้น มีทางกระทำได้ด้วยฮอร์โมน เมื่อใช้การผสมเทียม อัตราผสมติด (คิดจากแม่วัวไม่เป็นสัดอีกภายใน 60 ถึง 90 วัน) ค่อนข้างดี ส่วนจำนวนอุ้มท้องยังไม่เป็นที่พอใจ สำหรับการทดลองชุดแรก แต่ดีขึ้นในชุดที่สอง ดังนั้นจึงคาดได้ว่า ภายในอนาคตอันใกล้จะสามารถควบคุมการเป็นสัดของแม่วัว และทำการผสมแม่วัวแต่ละฝูงได้ ภายในระยะค่อนข้างพร้อมกัน และสะดวกแก่การใช้ผสมเทียมด้วยเชื้อแข็ง งานเช่นนี้ยังต้องทำเพิ่มเติมอีกมากจึงจะได้ผลที่สามารถนำมาใช้ทั่วๆ ไปได้ โดยสิ้นค่าใช้จ่ายแต่พอควร

ACKNOWLEDGMENT

The authors express appreciation to Eli Lilly and Company for providing the Chlormadinone acetate premix 1.0 gm./lb., Premix #83, free of charge for this study.

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