

# TRIALS OF GONADOTROPIN TO REGRESS OVARIAN CYSTS PROVOKED BY HORMONAL INDUCTION OF LACTATION

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## Summary

Successful induction of lactation in 5 nulliparous repeat breeding cows was achieved by administering diethyl stilboestrol (0.1 mg/kg B.W.) and hydroxyprogesterone caproate (0.25 mg/kg B.W.) for 3 days followed by reserpine (4 mg/day) for 4 days, and dexamethasone (16 mg/day) for one day. The treatment caused cystic ovarian condition in all the animals. Intravaginally progesterone-soaked sponges suppressed but did not eliminate the behavioural estrus. Administration of LHRH (300 µg) regressed the cysts in all animals in the first instance but the cysts reappeared in 2 animals. One animal became pregnant and delivered a normal calf.

(Key Words: Cow, Induced lactation, Estrogen, Progesterone, Reserpine, Ovarian Cyst, LHRH)

## Introduction

Massive doses of gonadal hormones just for 7-, 5.5- or even 3-days (Smith and Schanbacher, 1973; Lambowicz et al., 1982; Dabas and Sud, 1989), followed by reserpine treatment lead to successful induction of lactation in majority of cases. However, in several cases adverse effects including frequent signs of estrus progressively leading to nymphomania and development of cystic ovaries and attempts to control these problems have been reported (Nakao et al., 1978; Bugalia and Kohli, 1981; Dabas et al., 1989). This note describes briefly the results of administration of progesterone or LHRH on the cystic ovaries observed in cattle following induction of lactation.

## Materials and Methods

Five repeat-breeding nulliparous cattle (4 crossbred and 1 Sahiwal) aged between 45-90 months were selected at the local farmer's yard. The animals had previously been inseminated from 13 to 24 times without success. The animals were administered s/c stilboestrol dipropionate (Veto-

strol<sup>®</sup>) and hydroxyprogesterone caproate (Proluton depot<sup>®</sup>) @ 0.1 mg and 0.25 mg per kg. B.W. per day for 3 days followed by reserpine @ 4 mg per animal per day on days 8 to 11 (Dabas and Sud, 1989). On day 16 each animal received 16 mg dexamethasone (Dexona<sup>®</sup>) i/m. On day 26, Proluton depot-soaked sponges (250 mg) were placed intravaginally in each animal for 7 days. At approximately 50th day of the experiment each animal was administered LHRH 300 µg i/v. Throughout the period, the successfully induced lactation animals were handmilked twice daily.

## Results

All cross-bred animals exhibited mild symptoms of reserpine toxicity like drowsiness and panting which lasted only 3 days. The Sahiwal heifer, on the other hand, suffered from pronounced diarrhoea, dyspnea and staggering gait. The animal was given symptomatic treatment and other Veterinary acids and within a fortnight the animal recovered and became normal.

Except for Sahiwal heifer, all other cattle were successfully induced into lactation. Their milk yield data for the first 30 days are presented in figure 1. One animal (No. 1933) fell sick on day 26 of the experiment. This caused a sharp drop in its milk yield for the next 2-3 days. The animals reached their peak milk yields (7.5 to 12.5 kg/day) by the second month of lactation (data not shown).

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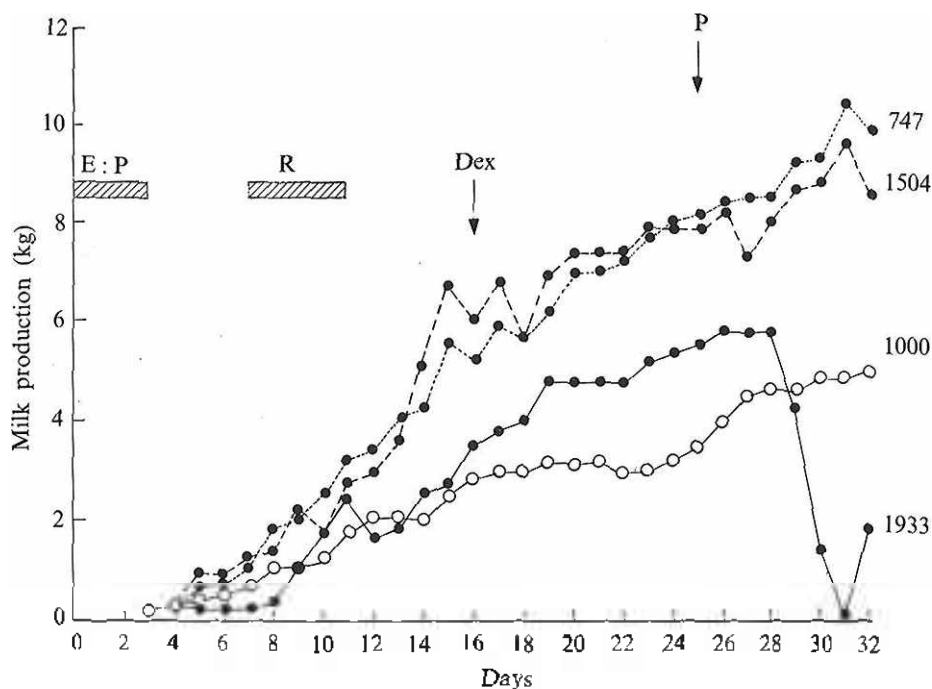


Figure 1. Daily milk yield (kg) of induced heifers.

(E = Estrogen ; P = Progesterone ; R = Reserpine ; Dex = Dexamethasone)

Following estrogen-progesterone treatment, all heifers exhibited signs of nymphomania and were frequently mounting each other. Intravaginal placement of progesterone soaked sponges suppressed the nymphomaniac behaviour in all animals as long as the sponges were *in situ*. Soon after the removal of these sponges, behavioural estrus-like symptoms, though of lesser magnitude and at irregular intervals were again observed. Rectal examination confirmed the presence of cystic ovaries in all the animals. Administration of LHRH regressed the cysts and estrus symptoms

were also suppressed. However the cysts reappeared in 2 animals.

Animals exhibiting estrus were artificially inseminated and one of them became pregnant.

### Discussion

The results indicate that 3-day steroid hormonal therapy can be successfully used for induction of lactation. This is certainly an improvement on the original 7-day therapy suggested by Smith and Schanbacher (1973) and used by

TABLE 1. BREEDING HISTORY OF HORMONAL INDUCED HEIFERS

Sl. No.	Animal No.	Age (month)	A. I. attempts	Induced (+) or Not (-)	Reproductive status		Peak milk yield (kg/day)
					Pre-Induction	Post-Induction	
1.	CB 747	76	19	+	R.B.	R.B.	12.5
2.	CB 1933	58	13	+	R.B.	Cystic ovary	8.0
3.	CB 1504	90	24	+	R.B.	Cystic ovary	10.5
4.	CB 1000	45	12	+	R.B.	Pregnant	7.5
5.	CB 104 (Sahiwal)	60	15	-	R.B.	R.B.	-

R.B. = Repeat Breeder.

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other workers (Kakar and Razdan, 1975, Lambowicz et al., 1982). Dabas and Sud (1989) were able to successfully induce lactation using only 3-day steroid hormone therapy in cattle. Unfortunately even this duration appears to be long enough to evoke cystic ovaries in the experimental animals as was noticed in animals administered more than 3 days of therapy for induction of lactation (Erb et al., 1973).

This and other studies (Dabas-unpublished) suggest that native cattle are more prone to reserpine toxicity compared to crossbred cattle and no explanation is forth coming inspite of the fact that the dose used much lower compared to the one used by others (Atheya et al., 1985; Peel et al., 1979).

Several methods have been suggested for regression of cysts and estrus symptoms in cattle, exhibiting cystic ovarian condition. Peel et al. (1979) reported reduced incidence of estrus activity in cattle when ratio of progesterone to estrogen was increased for induction of lactation. A single dose (750-1500 mg) or a daily dose (200-500 mg) of progesterone over a period of 10 to 17 days have yielded acceptable results (61- to 72% recovery) in the treatment of ovarian cysts (Johnson and Ulberg, 1967; Signorini, 1971).

In the recent past much emphasis has been given on the use of gonadotropic compounds for the treatment of this malady. The products high in luteinizing hormone (LH) (Kesler and Garverick, 1982) or GnRH, LHRH etc. (Kesler et al., 1979; Hernandez-Ledezma et al., 1982) have been successfully used in the treatment of cystic ovarian disease. As in our previous study (Dabas et al., 1989) in the present study also the LHRH though successfully treated three cases but in two other cases the cysts reappeared. Further studies are needed to resolve this issue and to prevent the cysts formation in cattle if induced lactation technology is to be used commercially.

### Literature Cited

Atheya, U. K., S. C. Sud and H. S. Bhaga. 1985

- Toxic effect of reserpine in the buffalo. *Indian J. Anim. Sci.* 55:658-659
- Bugalia, N. S. and I. S. Kohli. 1981. Comparative efficacy of proluton depot, gonadotrophin L. H. and potassium iodide in nymphomaniac Rathi cows. *Haryana Agricultural Univ. J. Res.* 11:575-577.
- Dabas, Y. P. S. and S. C. Sud. 1989. Induction of lactation in cattle with estradiol 17-B and progesterone primed with progesterone. *Indian J. Exp. Biol.* 27:774-776.
- Dabas, Y. P. S., U. K. Atheya, S. C. Sud and B. D. Lakhchaura. 1989. Treatment of cystic ovarian disease in cows with gonadotropins. *Asian Australasian J. Anim. Sci.* 2:39-42.
- Erb, R. E., E. L. Monk, C. J. Callahan and T. A. Mollett. 1973. Milk yield and reproductive traits subsequent to treatment of cows with progesterone-neestrogen. *J. Dairy Sci.* 56:656.
- Hernandez-Ledezma, J. J., H. A. Garverick, R. G. Elmore, E. M. Brown and D. J. Kesler. 1982. Gonadotropin releasing hormone treatment of dairy cows with ovarian cysts. III Steroid in ovarian follicular fluid and ovarian cyst fluid. *Theriogenology* 17:697-707.
- Johnson, A. D. and L. C. Ulberg. 1967. Influence of exogenous progesterone on follicular cysts in dairy cattle. *J. Dairy Sci.* 50:758-761.
- Kesler, D. J. and H. A. Garverick. 1982. Ovarian cysts in dairy cattle. A Review. *J. Anim. Sci.* 55:1147-1159.
- Kesler, D. J., H. A. Garverick, R. G. Elmore, R. S. Youngquist and C. J. Bierschwal. 1979. Reproductive hormones associated with the ovarian cyst response to GnRH. *Theriogenology* 12:109-114.
- Lambowicz, K., A. Rabek and T. Skrzeczkoweki. 1982. Hormonal induction of lactation in the cow. *Br. Vet. J.* 138:203-208.
- Nakao, T., Y. Numata, M. Kubo and S. Yamauchi. 1978. Treatment of cystic ovarian disease in dairy cattle. *Cornell Vet.* 68:161-178.
- Peel, C. J., J. W. Taylor, I. B. Robinson, and R. D. Hooley. 1979. The use of oestrogen, progesterone and reserpine in the artificial induction of lactation in cattle. *Aust. J. Biol. Sci.* 32:251-259.
- Signorini, G. C. 1971. Clinical observations on the use of chlormadinone in the treatment of nymphomania in cattle in the Mantua region. *Clinica Veterinaria.* 94:195-202.
- Smith, K. L. and F. L. Schanbacher. 1973. Hormone induced lactation in the bovine. I Lactational performance following injections of 17-B estradiol and progesterone. *J. Dairy Sci.* 56:738-743.