# Boosting Dairy Farm Profitability: Utilizing Induced Lactation to Address Infertility-Related Culling: A Case Report

**Mohd Mujaheed Pasha*, Venkanagouda Doddagoudar, Malasri G, Kotresh Prasad, and Devaraj**

Department of Veterinary Gynecology and Obstetrics, Veterinary College, KVAFSU, Bidar Karnataka, India

Department of Livestock farm complex, Veterinary College, KVAFSU, Bidar Karnataka, India

*Corresponding author e-mail: *mmujahid29@gmail.com*

DOI: https://doi.org/10.5281/zenodo.15004085.

**ABSTRACT**

Significant culling of high-producing cows with low fertility reduces dairy farm profitability, as these cows are replaced with heifers. Induced lactation in nonpregnant cows may reduce culling and increase profits. A three-and-half-year-old Jersey cross heifer, presented for artificial insemination at the Veterinary Clinical Complex, Veterinary College Bidar, had a history of multiple failed inseminations despite normal cyclicity. The owner's intent to cull the animal led to a recommendation for hormonal lactation induction. The protocol included Diethylstilbestrol (6 mg/100 kg BW) and hydroxy progesterone caproate (20 mg/100 kg BW) for 10 consecutive days, followed by Dexamethasone (24 mg full dose) and Metoclopramide (50 mg full dose) on the 11th, 12th, and 13thdays. Milking and massaging commenced immediately. Initially, watery secretion was observed, transitioning to milk-like secretion by the 12th day. Milk production increased from 250 ml on the 15thday to a peak of 3.5 liters by the 30thday. The milk was not used for consumption until after the 30thday. Estrogen, progesterone, prolactin, and glucocorticoids work together to initiate lactogenesis. Estrogen is vital for the formation of milk ducts, while progesterone is crucial for the development of milk-producing structures. Prolactin and growth hormone regulate milk production during both the initiation and maintenance phases of lactation. Dexamethasone promotes mammary gland development and the onset of milk synthesis, and Metoclopramide, by blocking dopamine, increases prolactin levels. Inducing lactation through the administration of estrogen and progesterone in infertile cows can effectively decrease involuntary culling and reduce genetic losses.

**Keywords:** Heifer, Infertile, Induction, Lactation

## INTRODUCTION

In dairy herds, reproductive failure seems to be one of the main causes for involuntary culling, which leads to productive and economic losses once such failures reduce the number of milking cows and, as a consequence, affects milk production/year.

One measure that could have been taken, in order to decrease the involuntary culling rate, is achievement of maximal reproductive efficiency, although it is not easy to get to it because reproductive traits are characterized for having low repeatability and so it will be affected by several factors. Accordingly, artificial induction of lactation is one of the tools that the producer count with to reduce the in voluntary culling rate as well as the genetic losses.

## ANAMNESIS

A three-and-half-year-old Jersey cross heifer, presented for artificial insemination at the Veterinary Clinical Complex, Veterinary College Bidar, had a history of multiple failed inseminations despite normal cyclicity. Vaginal discharge was observed for 12 hours. Previously animal was treated with CIDR-Synch protocol. Hence owner's intent to cull the animal led to a recommendation for hormonal lactation induction.

## GYNAECO-CLINICAL EXAMINATION

On clinical examination all the physiological parameters were normal that is Rectal temperature 100.8°F, Heart Rate 78 bpm and Respiratory Rate 24 breaths/m. On per rectal examination revealed cervix was soft, uterine body was tonic, uterine horns symmetrical, Right ovary having follicle and left ovary was not having any palpable structure.

## CASE DISCUSSION

**Diethyl stilbesterol and Progesterone:**

Mammary gland duct growth is stimulated by estrogen and alveolar growth is stimulated by progesterone hormone. Estrogen and progestērone in combination stimulate lobule-alveolar development of the mammary gland (Tucker, 2000).

**Dexamethasone**

Increase in circulation at parturition is an essential factor for initiating lactogenesis (Collier *et al*., 1975). Alveolar cell differentiation of the gland. Compete with progesterone for mammary epithelial cell binding sites.

**Metoclopramide and Prolactin**

Circulatory prolactin levels surge prior to parturition (Ingalls, 1973) is necessary for lactogenesis (Fulkerson, 1979). Prolactin and glucocorticoids work synergistically along with estrogen and progesterone for the onset of galactogenesis (Akers, 2003; Mohan *et al*., 2009) **Economics**

It more profitable to induce lactation in non-breeder cows compared to purchasing replacement heifers. Induced cows net present value (NPV) was $520 US greater than that for replacement heifers (Magliaro *et al*., 1999; Kensinger, 2000).

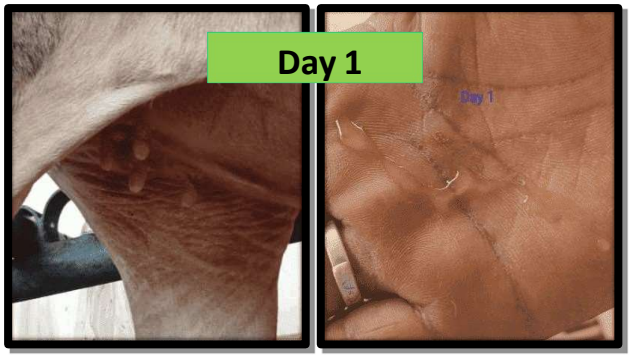
**Milk yield**

Compared with natural lactation the differences in milk compositions (fat, protein and lactose) were slight and non-significant (Ball *et al*., 2000). No effect on milk composition and somatic cell count (SCC). Uniform development of follicles following luteolysis coupled with metoclopramide therapy may be the reason for increased yield in pre-synchronized animals (Tracy 2002, Shridhar and Narayana 2006).

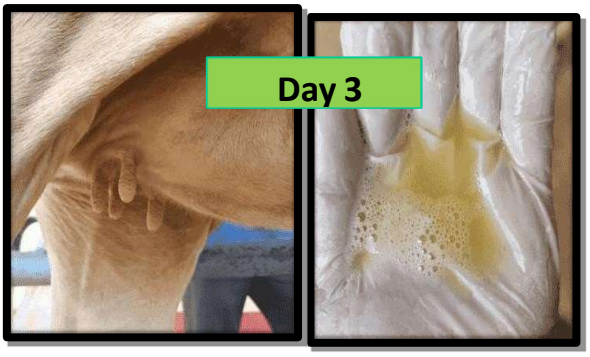
## LACTATION INDUCTION PROTOCOL

| Day | Treatment | Remarks |
|---|---|---|
| **Day 1 to Day 10** | Inj. Diethylstilbestrol @0.06mg/kg B.wt i/m<br>Inj. Hydroxy Progesterone Caproate @0.2mg/kg B.wt i/m | Additionally, animal was supplemented with<br>• Liq. Ascal Gold 100ml S.I.D p/o<br>• Inj. Synkomet™ 10ml i/m<br>• The udder was massaged twice a day |
| **Day 11, 12 and 13** | Inj. Dexamethasone 24 mg i/m<br>Inj. Metoclopramide 50mg i/m | |

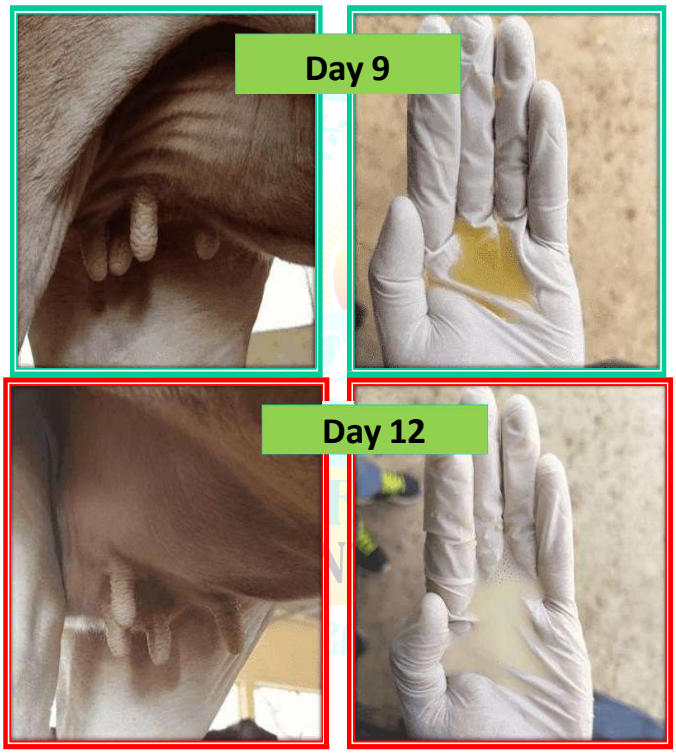
**DEVELOPMENT OF UDDER AND MILK SECRETION**




Mammary gland development & secretion




Mammary gland development & secretion




Mammary gland development & secretion

Mammary gland development & secretion


**Mammary gland development & secretion**

**Day 12, 14 and Day 16**

Day 1 V/s Day 30 Day 1 V/s Day 30

**COST ECONOMICS OF DRUGS USED FOR LACTATION INDUCTION**

| Name of the Drug | Maximum Retail Price | Quantity | Total |
|---|---|---|---|
| Inj. Diethylstilbestrol 10ml | ₹ 85 | 3 | ₹ 255 |
| Inj. Hydroxy Progesterone Caproate 3ml | ₹ 109 | 1 | ₹ 109 |
| Inj. Dexamethasone 30ml | ₹ 40 | 1 | ₹ 40 |
| Inj. Metoclopramide 20ml | ₹ 36 | 2 | ₹ 72 |
| Liq. Ascal Gold 1 Liter | ₹ 200 | 1 | ₹ 200 |
| Inj. Synkomet™ 30ml | ₹ 170 | 1 | ₹ 170 |
| **Total** | | | **₹ 846** |

**NET INCOME FOLLOWING LACTATION INDUCTION**

| **Income** | | |
|---|---|---|
| 3.5 liters / day | ₹40 × 3liters | ₹120 |
| For 305 Days | ₹120 × 305 | ₹36,600 |
| **Total Income** | | **₹36,600** |

| Daily feeding cost | | Expense |
|---|---|---|
| 1 kg of concentrate/ day | ₹24 × 1kg | ₹24 |
| 20 kg of Green/ day | ₹2 × 20kg | ₹40 |
| Total cost per day | | **₹64** |
| For 305 Days | ₹64 × 305 | **₹19,520** |
| Total cost of Medicine | | ₹846 |
| **Total Expense** | | **₹20,366** |

**Net Income for the farmer = ₹36,600 - ₹20,366 = ₹16,234**

## CONCLUSION

**Enhanced Breeding Efficiency and Continuous Milk Production**

Enables animals to come into estrus and become pregnant during lactation which enhances breeding efficiency and ensures continuous milk production. It can be an alternative for high producing cow with low fertility.

**Comparable and Stable Milk Quality**

Similar in composition to milk produced after normal calving, maintaining its quality and nutritional value.

**Economic Benefits and Cost Reduction**

Can generate substantial economic profits by reducing herd culling losses and replacement costs. Contributing to overall farm sustainability and profitability.

## REFERENCES

Akers, R. M. (2003). Lactation and the Mammary Gland. Can Vet J. 44 (12):977.

Ball S., Polson K., Emeny J., Eyestone W., Akers R.M. 2000. Induced lactation in pre pubertal Holstein heifers. J Dairy Sci 83:2459–2463Livestock in a Balance (2009) Food and Agricultural Organization (FAO).

Collier, R.J., Bauman, D.E. and Hays, R.L., 1975. Milk production and reproductive performance of cows hormonally induced into lactation. *Journal of Dairy Science*, *58*(10), pp.1524- 1527.

**Cite this article:**

Mohd Mujaheed Pasha*, Venkanagouda Doddagoudar, Malasri G, Kotresh Prasad, and Devaraj. (2025). Boosting Dairy Farm Profitability: Utilizing Induced Lactation to Address Infertility-Related Culling: A Case Report. Vet Farm Frontier, 02(02), 39–43. https://doi.org/10.5281/zenodo.15004085.