

How to Induce Lactation in Non-Pregnant Mares

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Poor milk production or loss of a mare in the peripartum period can seriously jeopardize the viability of a foal. Furthermore, hand feeding an orphaned foal is a round-the-clock responsibility in the early weeks of the foal's life. Many areas of the country and world do not have ready access to nurse mare bands. Raising a foal with a mare is much more desirable than hand-rearing an orphan foal both for the socialization of the foal and the nutrient content of natural mare's milk. Therefore, a practical method for the induction of lactation in non-foaling mares is extremely valuable in a situation where a foal is left without a lactating mare.

In addition, induction of lactation in non-pregnant mares is an extremely valuable tool for owners of nurse mare farms. When a nurse mare is leased to the owner of an orphan foal, part of the agreement stipulates that the nurse mare be pregnant when she returns to the nurse mare farm or a penalty is imposed in the way of an additional fee. Unfortunately, each year, many nurse mares are returned not pregnant. This is an economic hardship for the owner of the nurse mare, because she will not be usable the following year. Having a method to induce lactation in a non-pregnant mare can salvage this situation for nurse mare owners.

Daels et al.¹ were the first to describe induction of lactation in non-foaling mares. The protocol used to induce lactation in 24 "dry" mares was as follows:

1. Mares delivered and nursed at least one foal.
2. Days 1–7: placement of a vaginal sponge containing 500 mg altrenogest and 50 mg estradiol benzoate.
3. Days 8–14: the first sponge was replaced with a second vaginal sponge containing 500 mg altrenogest and 50 mg estradiol benzoate.
4. Day 8: administer estradiol benzoate (50 mg, IM) and prostaglandin (5 mg dinoprost, IM).
5. Days 8–14: administer sulpiride (1 mg/kg, IM) twice daily.
6. Day 9: begin milking mares. The mare was milked five times per day using a milking machine designed for goats. Oxytocin (5 IU, IM) administered ~2 min before milking.

This protocol worked consistently on treated mares. Foals raised from adopted mares had slightly lower weight gains than foals raised by their natural mothers during the first 2 wk of nursing. Differences in weight gain persisted over time but did not increase.

The goal of this paper is to describe a practical method of inducing lactation using a modification on the protocol described by Daels et al.¹ This protocol was administered to 20–25 mares/yr (2003–2005) on a large nurse mare farm in Central Kentucky.

1. Days 1–7: administer 150 mg progesterone

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and 50 mg estradiol 17 β IM once daily to non-pregnant mares.

2. Day 7: administer 5 mg prostaglandin F2 α ^a IM.
3. Days 1–10: administer 500 mg Sulpiride IM twice daily.
4. Because the nurse mare farm had a readily available supply of foals from mares that were already leased, one foal was placed with the non-pregnant mare on day 1 of treatment to supply suckle stimulus to the mare (in place of the five times per day milking). This foal was supplemented with mares' milk or mares' milk replacer.
5. Oxytocin at 5 IU per injection was occasionally used at the discretion of the owner.
6. Occasionally, foals were replaced (up to three foals) depending on whether the foal was an aggressive suckler or not.

Using the above protocol, ~80% of treated mares lactated. All mares were treated early in the foaling season (January and February), and none of the mares were exposed to artificial light. Maximum milk production was obtained after 10 days of treatment with sulpiride. Sulpiride is a dopamine D₂ receptor antagonist. Dopamine exerts a tonic inhibitory action on the hypothalamic–pituitary axis by inhibiting prolactin secretion from the anterior pituitary. Inhibition of dopamine secretion, in turn, promotes prolactin secretion. Prolactin is involved in mammary development and the initiation of lactation.

Estrogen and progesterone are used in this protocol to stimulate mammary gland development. Estrogen stimulates cell division and development of the mammary ducts. Progesterone is responsible for lobuloalveolar growth. Lactogenesis is thought to be signaled through a decline in progesterone and rise in prolactin, as seen late in gestation.²

In summary, there are several advantages to using this modified protocol. It is practical, affordable, and provides reliable results. An owner of a poorly lactating mare can potentially induce milk production in the mare while keeping the foal with its mother. Orphan foals can be bonded to non-pregnant mares that have previously foaled. This protocol is also useful for nurse mare owners to salvage lost productivity in non-pregnant mares.

This protocol has been an economical, practical way for induction of lactation in otherwise unusable mares on the subject nurse mare farm. The cost is minimal per mare, and it is reasonable to obtain a mare that can be used as a nurse mare. The cost for this treatment is approximately \$20.00 for the progesterone-estradiol injections and \$170.00 for the 10 days of sulpiride treatment.

References and Footnote

1. Daels PF, Duchamp G, Massoni S, et al. Induction of lactation in non-foaling mares and growth of foals raised by mares with induced lactation, in *Proceedings. Eight International Symposium on Equine Reproduction 2002*;859–861.
2. Mepham TB. *Physiology of lactation*. Milton Keynes, Open University Press, 1987.

^aLutalyse, Pharmacia & Upjohn Company, Kalamazoo, MI 49007.