Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 06, Issue: 03 (MAY-JUNE, 2026)
Available online at http://www.agriarticles.com
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Oestrus Induction in Bitches: Hormonal Approaches and Reproductive Management

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Oestrus induction in bitches is an important reproductive management practice used to facilitate planned breeding, shorten prolonged anoestrus, and obtain high-quality oocytes for research purposes (Stornelli *et al.*, 2006). Unlike many domestic species, the bitch is considered a monoestrous animal, exhibiting only one oestrus during each reproductive cycle. The canine reproductive cycle comprises four phases: proestrus, oestrus, diestrus, and anoestrus. Anoestrus is a prolonged period of reproductive inactivity characterized by basal concentrations of progesterone and estrogen. Although gonadotropin secretion remains relatively stable during this phase, ovarian responsiveness to these hormones appears to be reduced (Stornelli *et al.*, 2006). Prolactin has been implicated as one of the major factors contributing to this reduced ovarian activity by exerting inhibitory effects on the hypothalamic-pituitary-ovarian axis.

Dopamine Agonists in Oestrus Induction

Dopamine functions as a prolactin inhibitory factor (PIF), and dopamine agonists have been widely employed to induce oestrus in bitches by suppressing prolactin secretion (Gobello, 2000).

1. Bromocriptine

Bromocriptine is a D2 dopamine receptor agonist that also interacts with GABAergic, serotonergic, and adrenergic receptors. Due to its relatively low specificity, its use is frequently associated with adverse effects such as vomiting, anorexia, inappetence, and depression (Gobello, 2000).

2. Cabergoline

Cabergoline is a selective and long-acting dopamine agonist. Owing to its high receptor specificity, it produces minimal adverse effects and is considered one of the most effective pharmacological agents for inducing oestrus in bitches (Gobello, 2000).

3. Metergoline

Metergoline primarily acts as a serotonin antagonist but exhibits dopaminergic activity at higher serum concentrations. Although veterinary formulations are available, its use may be accompanied by nervousness, depression, and anorexia because of its lower receptor specificity (Gobello, 2000).

The effectiveness of dopamine agonist therapy depends largely on the timing of administration. Treatments initiated after the intermediate stage of anoestrus generally produce better reproductive responses and shorter intervals to the onset of oestrus (Stornelli *et al.*, 2006).

Gonadotropin-Based Protocols

Exogenous gonadotropins are used to mimic the endocrine events that naturally occur during proestrus, stimulating follicular growth and development (Ribeiro et al., 2007). The

hormones most commonly used include follicle-stimulating hormone (FSH), equine chorionic gonadotropin (eCG), luteinizing hormone (LH), human chorionic gonadotropin (hCG), and human menopausal gonadotropin (hMG).

Protocols involving prolonged administration of eCG or high-dose combinations of eCG and hCG have generally yielded unsatisfactory pregnancy rates (Ribeiro et al., 2007). However, administration of eCG at 29 IU/kg/day for five consecutive days followed by a single dose of 500 IU hCG has shown improved reproductive performance. Although FSH-LH protocols alone are less effective than eCG-based treatments, their efficacy may be enhanced when combined with diethylstilbestrol (DES) (Ribeiro *et al.*, 2007).

GnRH and GnRH Agonists

Another approach to oestrus induction involves the administration of gonadotropin-releasing hormone (GnRH) or its agonists. These compounds stimulate the release of endogenous gonadotropins, thereby promoting follicular development and initiation of the oestrous cycle (Stornelli *et al.*, 2006).

Pulsatile administration of GnRH every 90 minutes for six to twelve days has produced encouraging results, although the requirement for infusion pumps may limit practical application. Alternative protocols involve repeated subcutaneous administration of GnRH. More recently, biodegradable slow-release GnRH implants have become available and have demonstrated excellent efficacy in inducing oestrus and achieving satisfactory fertility rates. Reported fertility rates associated with GnRH-based protocols range from 37% to 85% (Stornelli *et al.*, 2006).

Use of Prostaglandins

Prostaglandins administered during diestrus can induce luteolysis, leading to regression of the corpus luteum and shortening of the interoestrous interval. This treatment can reduce the interval to the next oestrus by approximately 80 days and may therefore be useful in reproductive management programs (Stornelli *et al.*, 2006).

Conclusion

Several hormonal approaches are available for inducing oestrus in bitches. Dopamine agonists, particularly cabergoline, are highly effective in shortening anoestrus and promoting ovarian activity. Gonadotropins and GnRH-based therapies provide additional methods for stimulating follicular development and achieving fertility, while prostaglandins can be used to shorten interoestrous intervals. The selection of an appropriate protocol should consider the reproductive status of the animal, desired breeding outcomes, drug availability, and economic feasibility.

References

1. Gobello, C. (2000). Clinical Applications of Dopaminergic Agonists in Canine Reproduction. *Analecta Veterinaria*, 20(2), 31–38.
2. Ribeiro, A. P. C., Vicente, W. R. R., Santos, I. W., Pires, E. A., Alves, A. E., & Apparício, M. (2007). Gonadotropins in the Induction of Oestrus in Bitches. *Revista Brasileira de Saúde e Produção Animal*, 8(4), 324–334.
3. Stornelli, M. C., Gimenez, F., Tittarelli, C. M., Sanignone, C. A., De La Sota, R. L., & Stornelli, M. A. (2006). Induction of Oestrous Cycles in the Bitch: A Bibliographic Review. *Analecta Veterinaria*, 26(2), 39–45.