

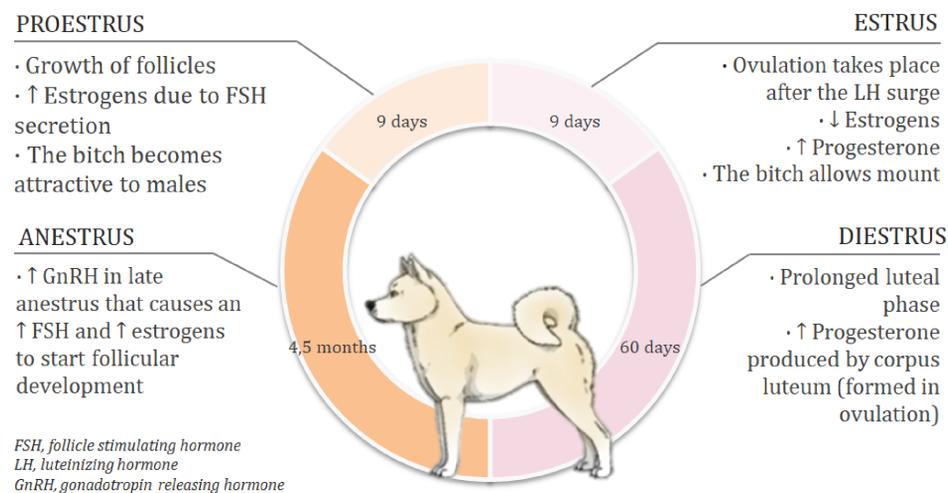
# ESTRUS INDUCTION IN CANINE SPECIES

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**OBJECTIVES** The aim of this study is to analyze and compare the efficiency of different treatments to induce estrus in canine species.

## THE CANINE ESTROUS CYCLE



## ESTRUS INDUCTION

Induction of estrus may be used:

- when breeding opportunities are missed or following conception failure;
- as a treatment for primary or secondary anestrus;
- to make the bitch available for a given stud dog, to manage birth of pups at an optimal time of the year;
- to create reproductively similar dogs for research;
- to synchronize recipients for embryo transfer.

## TREATMENTS FOR ESTRUS INDUCTION IN DOGS

### GONADOTROPINS

Different protocols combining eCG with hCG giving variable results.

Side effects: unpredictability of ovarian response, premature luteal failure (shortening of diestrus and pregnancy loss) and allergic reactions.

### ESTROGENS

Estrus induction with diethylstilbestrol: 46-100%.

Estradiol benzoate before a cabergoline treatment improves estrus induction and shortens proestrus length.

Side effects: not reported on short-term oral treatments but alopecia and myelosuppression on long-term ones.

### DOPAMINE AGONISTS

Oral administration of bromocriptine or cabergoline is given until the onset of proestrus.

Estrus induction with cabergoline: 60-100%. The treatment is performed with better results if treatment takes place in late anestrus. Cabergoline induces fertile estrus in bitches with primary or secondary anestrus.

Side effects: vomits and changes of coat color.

### GONADOTROPIN-RELEASING HORMONE AGONISTS

Deslorelin implants increase FSH and LH secretion, leading to estrus induction in >90% of treated bitches. It should be used during anestrus. Clinical signs of proestrus are presented one week after the onset of the treatment.

Side effects: risk of luteal insufficiency or suppression of estrous cycle when the implant is not removed after ovulation or 2-3 weeks after implantation.

|                  | eCG and hCG (n=28)<br>(Jurczak et al. 2016) | Cabergoline (n=14)<br>(Cirit et al. 2007) | Deslorelin (n=24)<br>(Fontaine et al. 2011) |
|------------------|---|---|---|
| Estrus induction | 64,3%                                       | -   | 100%  |
| Ovulation rate   | 86,7%                                       | 92,9%                                     | 83,3%                                       |
| Pregnancy rate   | -   | 78,6%                                     | 69,6%                                       |
| Litter size      | -   | 5,9 ± 2,17                                | 6,7   |

eCG and hCG: 20 IU/kg for 5 days of eCG and 500 IU of hCG subcutaneous; Cabergoline: 0,6 µg/kg/day of cabergoline (low dose); Deslorelin: subcutaneous implant of 4,7 mg until ovulation.  
eCG, equine chorionic gonadotropin; hCG, human chorionic gonadotropin

## CONCLUSIONS

For estrus induction, deslorelin seems to be a good choice because of the short period from treatment to heat observation, percentage of estrus induction and pregnancy rate. However, a careful selection of the patient and side effects should be considered. Cabergoline results in good estrus induction with less side effects.

It is difficult and confusing to decide which is the best protocol for estrus induction, based on the literature, because most of the published results are based in studies performed with a small animal sample of different breeds and ages. Further studies are needed in order to optimize the efficiency of estrus induction protocols in canine species. Therefore, it is necessary to standardize doses and periods of administration for the different treatments in order to achieve the best results in estrus induction, ovulation and pregnancy rates and litter size, avoiding drug side effects.