

SERUM DESLORELIN AND PROGESTERONE CONCENTRATIONS IN BITCHES AFTER OVUPLANT® ADMINISTRATION

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INTRODUCTION

Pulsatile or continuous, short-term administration of gonadotropin-releasing hormone (GnRH) or its analogs induces estrus in bitches, while long-term treatment causes prolonged suppression of reproductive activity. The objectives of this pilot study were to evaluate the reproductive effects and serum levels of deslorelin released from a readily available short-term subcutaneous implant marketed for use in horses. We hypothesized that the implant releases deslorelin for a period long enough to induce a fertile estrus, but not to suppress luteal function.

MATERIALS AND METHODS

Eight anestrus bitches received subcutaneous implants containing 2.1 mg deslorelin acetate (Ovuplant®, Fort Dodge). The onset of pro-estrus was determined clinically while vaginal cytology was used to determine the onset of diestrus (D1). All bitches were inseminated during the induced estrus. Serum progesterone concentrations (SPC) were measured every 2 – 7 days, using a chemiluminescence assay. Serum deslorelin concentrations (SDC) were measured on days -1, 4 and 7 after implant administration and weekly thereafter, using a radioimmunoassay for human plasma (Peninsula Labs; San Carlos; CA) that was adapted for canine serum. SDC < 30 pg/ml were considered non-specific because SDC prior to treatment were 5-30 pg/ml.

RESULTS

The intervals from implant administration to the onset of proestrus and to D1 were 2 – 9 days (mean = 6.125) and 13 – 21 days (mean = 17.9), respectively. In all bitches, SPC rose during estrus, but there were distinct, premature declines in SPC, starting 1 – 4 weeks after D1. A degree of luteal resurgence was detected 2 – 3 weeks after the decline in 6 bitches. In the other two bitches, SPC did not recover and both bitches aborted at 33 and 45 days after D1, respectively. Highest SDC were found on days 4 or 7 after implant administration and were 332 – 984 pg/ml (mean = 635). In six of the 8 bitches, SDC were < 30 pg/ml by day 30 after implant administration. Of the remaining 2 bitches, SDC remained elevated for at least one more week and remnants of the implant were still present in the subcutaneous tissues of one bitch when she was euthanized 49 days after implant administration.

DISCUSSION

A single Ovuplant® induced fertile estrus in anestrus bitches followed by partial or complete luteal failure during early diestrus. We propose that the luteal failure was related to longer-than-expected release of deslorelin from the Ovuplant®, but appears to be reversible in some bitches. Luteal resurgence may be associated with increased prolactin secretion, which begins around 24 days after D1. Ovuplant® does not dissolve as rapidly in dogs as we had expected. Future studies will consider retrieving the implant after 7 days or using a variety of implant administration sites and implant sizes.

KEY WORDS Deslorelin, Dog, Estrus induction, GnRH, Ovuplant®