

PHYSIOLOGY OF PROLACTIN IN DOGS

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Prolactin is a peptide secreted by the anterior pituitary gland. The secretion of prolactin is reduced by the release of dopamine from the hypothalamus. The hormones which may be associated with increased secretion of prolactin are serotonin, oxytocin, oestrogen and low thyroxine concentrations, whereas progesterone and testosterone tend to be associated with reduced prolactin secretion. Prolactin is both a lactotroph and a luteotroph in bitches. Prolactin is secreted in a pulsatile fashion in bitches with strong variation throughout the stage of cycle. Prolactin concentrations are normally higher in bitches during late dioestrus and pregnancy, and especially during the post-partum period and during early anoestrus where the increased concentrations are associated with lactation. For example, in pseudopregnant bitches values of 35.5 ± 8.5 ng/ml have been reported whereas during early dioestrus the mean concentrations were 4.5 ± 1.5 ng/ml. In pregnant bitches, the mean prolactin concentration increased from day 10 to a maximum of 120 ng/ml on day 60 (mean 40.8 ± 50.3 ng/ml). In normal male dogs, normal reference ranges reported are lower than those found in bitches including 1.4 ± 0.6 ng/mL, 3.0 ± 0.3 ng/ml and 0.9 to 10.5 ng/ml. The secretion may be pulsatile. It is unclear whether or not secretion of prolactin is related to season in dogs. In bitches and in dogs, little is known about infertility and prolactin in naturally occurring situations. In women, high concentrations of prolactin in cycling women (>25 ng/ml) may interfere with fertility by inhibiting FSH and GnRH and therefore ovulation. Often these women will have galactorrhoea present. Common causes of hyperprolactinaemia in women are prolactinomas and medications, and rare causes are thyroid disease. In men, hyperprolactinaemia is a rare cause of infertility but prolactinomas cause a reduction in GnRH and LH and therefore a reduction in testosterone resulting in a loss of libido and a reduction in spermatogenesis. Treatment of hyperprolactinaemia in humans is usually medical, involving dopamine agonists, and sometimes surgical, to remove tumours. In male dogs with experimentally induced testicular degeneration, prolactin concentrations increased as testosterone concentrations decreased. In addition, in dogs with pituitary dependant hyperadrenocorticism, prolactin concentrations were also increased and this may affect fertility.

References

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