ABSTRACTS

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Thyroid hormones and the bitch ovarian cycle

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OBJECTIVE AND METHODS: Thyroid hormones are essential for normal ovarian activity in mammalian species. An abnormal level can cause infertility or reduced reproductive function (1). It has been shown that triiodothyronine (T3) synergizes with follicle-stimulating hormone (FSH) to induce differentiation of granulosa cells in porcine follicles (2) and that the treatment with thyroxin (T4) enhances antral follicular development and ovulation rates in rats (3). Moreover the role of thyroid hormones in the regulation of cholesterol metabolism within the ovarian follicular cells is still under debate (4). The aim of this study was to determine and compare the concentrations of free fractions of thyroid hormones (T3 and T4) in peripheral circulation in relation to the bitch ovarian cycle. All bitches employed in this study were housed in the breeding centre of English Bulldog. Four healthy bitches were selected and studied during their heating period from proestrous to the first day of the cytological diestrous. Signs both clinical and behavioral of the estrous were also evaluated. Vaginal cytological smears to monitor the estrogens induced modifications of the vaginal epithelium together with a blood peripheral sample to dose the thyroid hormones were carried out every three days. Cytological smears were evaluated by the Diff Quik stain while T3 and T4 serum concentration were measure by validated EIA Kits (FT3 e FT4 Radim, Pomezia; Italy). Obtained results were analyzed by ANOVA test and considered significant for P<0,05.

RESULTS: In all bitches the proestrous-estrous period lasted 18 days. During the estrous cycles in all bitches studied the serum concentration of both thyroid hormones remained constant until the 12th day, then the FT4 concentration began to rise (P<0,005).

CONCLUSION: The evaluation of systemic concentrations of thyroid hormones would give us a better understanding of the involvement of these hormones and their potential role in the bitch ovarian function. It is feasible that the increase of FT4 serum concentration at the end of the estrous cycle is related to the beginning of luteogenesis, period in which the bitch prepares herself to receive the conceptus. This is a critical time for the female because it is associated with the increase of metabolites requirement. At this time the thyroid gland could have been asked to increase the production of FT4, the not biological-active form of its two hormones, to support at the occurrence the metabolic requirements by converting it into FT3.