

# CRC Handbook Of Pharmacologic Methodologies For The Study Of The Neuroendocrine System

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## Concentrations of Reproductive Hormones in Canine Serum Throughout Late Anestrus, Proestrus and Estrus<sup>1</sup>

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### ABSTRACT

Concentrations of estradiol, progesterone, luteinizing hormone (LH), follicle-stimulating hormone (FSH) and prolactin in serum from 6 bitches bled daily for at least 45 days before the onset of proestrus, during proestrus and estrus were determined by radioimmunoassay. Mean concentrations of estradiol in serum were high early in the sampling period (20 to 46 ng/ml) and appeared to decrease prior to the onset of proestrus (8 to 19 ng/ml). There were sporadic increases in serum concentrations of LH throughout the sampling period in each bitch. Five of the 6 bitches sampled had increased serum concentrations of LH following the low mean concentration of estradiol just before the onset of proestrus. Mean concentrations of FSH were highest during anestrus (240 to 294 ng/ml) and near the time of the preovulatory surge of LH (297 ng/ml) and were lowest during proestrus (131 to 200 ng/ml). The mean concentration of progesterone for the 6 bitches remained at less than 1.0 ng/ml throughout late anestrus, but increased to greater than 1.0 ng/ml the day of the maximum mean concentration of LH (preovulatory LH surge). Mean concentrations of prolactin were variable throughout the sampling period and demonstrated no consistent pattern among bitches.

The results of the current investigation suggest that neither the canine ovary nor pituitary are quiescent during anestrus. The bitch appears to have sufficient FSH present during anestrus for follicular growth. Serum concentrations of LH appear to increase prior to the onset of proestrus when concentrations of estradiol are lowest, possibly inducing a new follicular phase. Progesterone and prolactin do not appear to be involved in the termination of anestrus in the bitch.

### INTRODUCTION

Although concentrations of estrogens, progesterone, luteinizing hormone, follicle-stimulating hormone and prolactin have been reported for proestrus, estrus and diestrus in the bitch (cf. review by Nett and Olson, 1982), few reports have included profiles of these hormones during anestrus. Those investigators that have reported concentrations of one or more of these hormones during anestrus generally measured only a limited number of samples (Edqvist et al., 1975; Hadley, 1975; Nett et al., 1975; Mellin et al., 1976; Grif, 1978).

Through characterizing the endocrine events which occur during late anestrus, perhaps a better understanding of the factors which

terminate anestrus and initiate a new follicular phase in the bitch will be realized. If such factors can be identified and regulated, it might be possible to alter the length of the inter-estrous interval in the bitch. By increasing or shortening the length of the interestrous interval, it should be possible to inhibit or enhance reproductive efficiency, respectively.

### MATERIALS AND METHODS

Six post-pubertal bitches of mixed breeds weighing between 16.4 and 25.0 kg were obtained from a local humane shelter and maintained in indoor runs at the Fort Collins Campus of Colorado State University. They were fed a commercial ration and provided water ad libitum. Fluorescent bulbs provided 14 h of light each 24-h period. Because no reproductive history was available, animals were determined to be in anestrus by measuring concentrations of LH and progesterone in the serum. If the concentration of LH was less than 200 ng/ml in any sample and the concentration of progesterone less than 0.5 ng/ml, the bitch was deemed to be in late anestrus. This was then confirmed by laparotomy. Bitches were observed daily for the presence of vulvar swelling and/or a mucoginous discharge from the vagina. Vulvar smears

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example, the therapeutic use of lithium salts for These examples serve to show that the study of endocrine systems in routine toxicity tests is Handbook of Radioimmunoassay,. Dekker . volume I, CRC Press Inc., Boca Raton, pp. They examine various methods for defining and measuring toxicity in a host of areas, including genetics, carcinogenicity, toxicity in major body systems, and the .Practice - Handbook of Veterinary Pharmacology - Crc Handbook On Methodologies For The Study Of The Neuroendocrine System.The present study was designed to assess the effect of chlordecone on the stimulation of oxidative stress in gill, liver changes in muscular antioxidant system of cichlid fish, Etroplus maculatus (Bloch, ). CRC Handbook of methods for oxygen radical research. Toxicology and Applied Pharmacology, ,

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