ABSTRACTS

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THE EFFECTS OF GNRH ANALOGUE DESLORELİN İMPLANTS ON REPRODUCTION IN FEMALE DOMESTIC CATS

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Introduction - In recent years the greatest advance in the use of GnRH based technology for long term fertility control has been the development and commercialization of depot formulations that release GnRH agonists for periods of up to one year. Chronic administration of GnRH agonists causes down regulation of GnRH receptors and desensitization of pituitary gonadotropes (1). A GnRH analogue, deslorelin has a potency perhaps 100 times that of GnRH (2) which can be found as an implant form for long-term but reversible suppression of ovarian activity thus contraception (3).

Objectives - The aim of the present study was to investigate the safety and the efficacy of deslorelin implants in supressing estrus behaviour and matings in a controlled ambient environment under 12 h light 12 h dark artificial fluorescent illumination in queens with a presence of a tomcat. Local and utero-ovarian side effects of deslorelin implants were also investigated.

Materials and methods

Animals - In this study, 28 adult queens and 3 tom cats (as a sperm donors) were used and queens were randomly divided into three groups. The queens were housed in groups and a tom cat was placed in the same room into a restricted area.

Study design - Group 1 (n=14), queens received 9,5 mg deslorelin implants (Suprelorin, Peptech Animal Health, Australia), Group 2 (n =7), queens received 5 mg megestrol acetate (MA) comprimes (Derma-Chat, Novartis, France) and deslorelin implants, and as a control group, Group 3 (n=7) queens were only given placebo implants. All implants were placed subcutaneously cranial to the interscapular region under 2.3 mg/kg xylazin hydrochlorid (Alfazyne, Turkey) sedation. In Grup 2 MA was given three times, 14 days and twelve hours before deslorelin implantation and 14 days after deslorelin implantation. Implantation areas controlled for ten days after implantation for the evaluation of local side-effects. Ovarian activity was monitored by fecal hormone analysis for three weeks before and eighteen months after implantation at three day intervals of fecal sampling. The animals were observed daily for estrus behaviour and checked individually at three day intervals for behavioral signs of estrus (tail deflection, lordosis, constant vocalization and rubbing against convenient objects). After eighteen month trial, queens were weighed and undergone ovariohysterectomy.

The ovaries were examined grossly for the presence of mature follicles and corpus luteum (CL) and the uterus was checked for any abnormal thickness. Reproductive tracts were collected at surgery, firstly weighed then fixed in 10% buffered formalin solution and processed routinely with paraffin embedding, sectioned and stained with hematoxylin and eosin. The ovaries were sectioned longitudinally and examined for primordial, primary, antral follicles and CL. The endometrium was evaluated histologically for the endometrial gland number and the luminal and glandular epithelial layer characteristics for epithelial lining.

Statistical analysis - The variability in estradiol levels and behavorial signs between the groups were analyzed by Oneway variance analysis and significancy was determined by Duncan test. Correlation between body weight and ovarium and uterus weight and the histological features in groups were evaluated by Pearson correlation method.
**Results** - Estradiol levels were significantly lower in Group 1 and Group 2 than Group 3 queens with an average of 128.48±19.97 ng/g, 90.44±7.16 ng/g and 283.26±39.21 ng/g, respectively, throughout the study, except for the first week of treatment. Estradiol values in treated queens were found significantly different from those determined in the control queens in some days of the study period (P values of <0.001, 0.01, and 0.05). After implantation an initial estrus-like increase in fecal estradiol concentrations occurred in all treated queens except one queen in Group 2. Two queens in Group 1 showed behavioral estrus after deslorelin implantation and allowed to mate *ad libitum* with three toms. No pregnancy was detected in these queens by an ultrasonographic examination performed a month later. An estrus-like increase in fecal estradiol concentration was found after 16.5 months of deslorelin implantation in a queen in Group 1. Group 1 and Group 2 queens had no signs of estrus behaviour throughout the study period, except one queen in Group 1, after 3.5 months of deslorelin implantation. This queen did not show another behavioral estrus but fecal estradiol concentrations were very high in all study period. Group 3 queens exhibited all signs of estrus according to their estrus cycle phase during the study period. General examination of reproductive tracts revealed that ovaries from Group 1 and 2 were smaller, and uterine horns were thinner than those from Group 3 and had no obvious CL or follicles like found in Group 3. Body weight values, the ovary and the uterus weights, endometrial gland numbers, primordial and primary follicles, antral follicles and CL numbers were significantly different between the groups (P values of <0.05, 0.01, 0.01, 0.001, 0.001, 0.001, respectively).

**Conclusion** - Deslorelin implants successfully suppressed estrus behaviour and estradiol secretion in queens for 18 months of study period. Further investigations are needed to demonstrate the effects of GnRH agonists on ovarian interstitial tissue.