ABSTRACTS

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NOVEL NON STEROIDAL LONG TERM CONTRACEPTIVE APPROACHES FOR QUEENS

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Introduction - Nowadays, a large proportion of queens are spayed to prevent problems associated with calling and unwanted pregnancies. Surgical spaying of queens may soon become scrutinized as it is not associated with obvious health benefits (as opposed to bitches, where it efficiently prevents the development of mammary tumours). Alternative approaches, if safe and efficient for extended periods of time, may therefore be worth further investigations.

Objectives - Two studies were therefore run to assess the efficacy and safety of two candidate approaches generating long term contraception in queens. The first strategy used an azagly-nafarelin containing implant (Gonazon) triggering desensitization of the pituitary to GnRH, therefore stopping follicular growth, heat and ovulation. The second strategy used a contraceptive GnRH vaccine generating GnRH antibodies blocking the function of the hypothalamo-pituitary-gonadal axis.

In the first experiment, one Gonazon implant (containing 20mg Azagly-nafarelin) was inserted subcutaneously in the neck of 6 treated queens for 3 years and ovarian activity of these queens, together with 6 control queens, was monitored for 3 years. The contraceptive efficacy of Gonazon was assessed by the proportion of queens in which a progesterone rise indicating ovulation was demonstrated following continuous housing with a vasectomised tomcat, which was rotated each week between treated and control queens. The marker of ovulation used was progesterone concentrations exceeding 10 ng/ml for at least 2 weeks. General safety was assessed by veterinary examinations including body-weight measurements, performed at study initiation, after one year, and then every 6 months. All six control queens ovulated regularly throughout the treatment period (3 years), as shown by fluctuations in progesterone with peaks at 20-30 ng/ml. Sixteen ± two ovulatory cycles were observed in each control queen during the 3 years of the study. At treatment initiation, three Gonazon treated queens had high progesterone suggesting that they had ovulated before treatment. During the week following treatment, two other queens displayed a rise in progesterone concentrations, corresponding to treatment-induced heat. Later on, all treated queens continuously displayed low progesterone concentrations until 2.5 years post implant insertion. At this stage, two queens had an isolated episode of follicular luteinisation (with progesterone peaking at 5 and 9 ng/ml). Later on, all queens of the treated group became again anovulatory (see figures).

In all queens, azagly-nafarelin concentrations peaked in the week following implant insertion (up to 5000 pg/ml), remained high (above 1000 pg/ml) for one month and later decreased slowly throughout the study. After 2.5 years of treatment, azagly-nafarelin concentrations were above 150 pg/ml in three queens, while they had reached the limit of quantification (28 pg/ml) in the others.

In conclusion this first study demonstrated that Gonazon efficiently prevented ovulation in queens (100%) for 3 years, and was well tolerated. Return to heat was not observed towards the end of treatment, despite low azagly-nafarelin concentrations in some queens.
In the second experiment, 10 queens were randomly allocated to two groups and were subcutaneously injected twice, 4 weeks apart, with a GnRH vaccine (produced by USDA-APHIS)(n=5/group) or left as untreated controls (n=5). Ovarian activity of all queens (housed with vasectomized tom cats) was also monitored by measuring progesterone concentrations in samples obtained every other week. Anti-GnRH antibody titres (ELISA) generated by each vaccine were also measured monthly.

Efficacy of the vaccine was assessed by the proportion of queens ovulating during the study. Throughout the first 6 months after the booster vaccination, 0/5 (0%), and 5/5(100%) queens of the GnRH vaccine and control groups respectively ovulated. Extension of the monitoring of ovarian activity of the queens vaccinated against GnRH for another 6 months period demonstrated no heat and mating for 52 weeks post-booster vaccination. Vaccination induced a robust and sustained rise in anti-GnRH antibody titres which were high and steady one year after the booster injection. The vaccine was well tolerated. All queens remained healthy throughout the study.

This second experiment showed that this GnRH vaccine is a safe and fully efficient approach to trigger a one-year long contraception in queens.

It is concluded that it is technically possible to obtain a safe and efficient long term contraception in queens for at least one (GnRH vaccine) and up to three years (Gonazon implant). Reversibility of the contraceptive effects of both treatments need, however, to be evaluated.