ABSTRACTS

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Use of deslorelin implants to schedule canine breeding activity: A study on 442 bitches

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OBJECTIVES AND METHODS: Deslorelin implants were previously reported as a valuable alternative for fertile estrus induction in adult bitches (1,2). Since bitches might cycle anytime throughout the year whereas puppies can be more easily sold at certain periods, GnRH implants could be proposed as a tool to schedule the breeding activity in kennels. The aim of this study was to evaluate, in a large kennel breeding various breeds, the influence of such induction protocols on fertility. 442 bitches from one kennel were included. 16 breeds were represented (345 bitches <25kg and 97 bitches >25kg). Among the 442 dogs, 71 bitches were treated: half of a deslorelin implant (Suprelorin®4.7mg, Virbac, Carros, France) was subcutaneously inserted in the umbilical region at least 5 months after natural estrus. The other bitches (n=371) mated on spontaneous estrus during the same period of time were included as control dogs. Time of ovulation was determined either by vaginal resistivity measurement (Ovulstart®, Nature et complements, France) (3) or by quantitative progesterone assay (MiniVidas®, Rhône-Mérieux, France): ovulation was considered when blood progesterone concentration reached 7ng/mL.

Implants were removed on the day of ovulation (2) or 20 days post-administration if ovulation did not occur. Bitches were mated on one and three days post-ovulation. Time between administration of the implant and ovulation was registered, together with the occurrence of parturition and the litter size. Results obtained on cycles induced with deslorelin were compared to those of natural cycles using Khi square and Student tests. Four groups were considered, according to the method used for ovulation determination and to the type of estrus (Table 1).

Table 1: Repartition of the 442 bitches depending of their type of heat (induced or not) and the technique used to determine the ovulation time.

<table>
<thead>
<tr>
<th>Ovulation time detection</th>
<th>Vaginal resistivity</th>
<th>Quantitative progesterone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(induced cycle)</td>
<td>G1</td>
<td>G2</td>
</tr>
<tr>
<td>(natural cycle)</td>
<td>G3</td>
<td>G4</td>
</tr>
<tr>
<td>Number of bitches</td>
<td>32</td>
<td>60</td>
</tr>
<tr>
<td>Age ± SD (year)</td>
<td>5.4±1.7</td>
<td>5.1±2.5</td>
</tr>
<tr>
<td>Number of small breed bitches</td>
<td>28</td>
<td>43</td>
</tr>
<tr>
<td>Number of large breed bitches</td>
<td>6</td>
<td>70</td>
</tr>
</tbody>
</table>
| RESULTS: Distribution of bitches in the two groups (“small” and “large” breeds) was not significantly different between G1 and G2 and in G3 vs G4. All bitches (G1+G3=71) receiving a deslorelin implant came into estrus. Ovulation was detected in 94.4% (67/71) of the induced animals. Bitches from G1 and G3 ovulated respectively 14±2.4 days and 12±2.5 days after insertion of the implant. Pregnancy rates were not significantly different between G1 and G2 (respectively 65.6% vs 58.3%, p>0.05). However litter size was significantly higher in G1 than in G2 (respectively 6±3.7 puppies vs 3.5±2 puppies, p<0.05). A similar situation was observed for G3 and G4 with pregnancy rates respectively 69.2% vs 61% (p>0.05) and litter sizes of 5±1.9 in G3 vs 4±2 puppies in G4. Breed size had no significant impact on fertility results.

CONCLUSION: Deslorelin implants appear as a reliable protocol to schedule fertile heats in anestrous bitches. Anovulation rate reported in this study (4 out of 71 bitches) was lower than that previously described (2), probably due to implantation in late anestrus. No alteration of the fertility on induced estrus was noticed. Even, litter size was increased after induction. Ovarian stimulation by deslorelin could promote follicular growth and/or decrease follicular atresia. Pregnancy rates did not differ between the two methods used to determine the occurrence of ovulation despite a 2 days difference in the day of ovulation. Blood progesterone is recognized as accurate with values of 6-7 ng/mL reached just at ovulation. It could be hypothesized that the prolonged life span of canine fresh sperm and oocytes might have covered the late matings decided based on vaginal resistivity.
Deslorelin implants are a promising tool to organize whelpings of bitches in time in large breeding kennels. It could allow the production of puppies during the months in which they are more easily sold. On a sanitary point of view, this could help to limit the number of puppies present at the same time in the kennel, and thus limit the risk of development of infectious diseases.

(1) Kutzler M, Lamb SV, Volkmann D. 2009 Comparison Between Vestibular and Subcutaneous Insertion of Deslorelin Implants for Oestrus Induction in Bitches Reprod Dom Anim 44(s2) 83–86