Premature luteal regression in superovulated goats induced to ovulate with GnRH or hCG

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CL maintenance (Pregnancy)

Day of the Estrous Cycle

Introduction
Premature CL regression

Introduction

Ovulation

Corpus luteum

Day of the Estrous Cycle

Estrus

Prog

PGF
Objectives:

- Combination Ovsynch and superovulation
- Comparison GnRH and hCG for ovulation induction:
  - LH surge
  - Ovulation time
  - Premature CL regression
  - Embryo recovery
Material and Methods
## Number of animals/group

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GnRH</td>
<td>17</td>
</tr>
<tr>
<td>hCG</td>
<td>17</td>
</tr>
<tr>
<td>Control</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
</tr>
</tbody>
</table>
Hormones for Estrus Synchronisation and Superovulation

- Prostaglandin $F_{2\alpha}$ (PGF) Dinolytic®
- Follicle Stimulating Hormone (FSH) Stimufol®
- Gonadotropin-Releasing Hormone (GnRH) Buserelin®
- Human Chorionic Gonadotropin (hCG) Chorulon®
- Progestogen (P4) Crestar®
Experimental protocol

Material & Methods

Department of Animal Science _ Goettingen
Material & Methods
Results
Results
Preovulatory LH-surge
(Mean ±SE)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Onset after treatment (h)</th>
<th>Peak after treatment (h)</th>
<th>Duration (h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GnRH</td>
<td>0.9 ±0.1 a</td>
<td>2.5 ±0.2 a</td>
<td>7.2 ±0.6 a</td>
</tr>
<tr>
<td>hCG</td>
<td>11.8 ±0.5 b</td>
<td>15.1 ±0.8 b</td>
<td>10.2 ±1.0 b</td>
</tr>
<tr>
<td>Control</td>
<td>16.8 ±2.2 c</td>
<td>19.4 ±2.2 c</td>
<td>9.6 ±0.7 b</td>
</tr>
</tbody>
</table>

Different letters signify significant differences among groups (p<0.01)
## Ovulation Time

*(Mean ±SE)*

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Ovulation after treatment (h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GnRH</td>
<td>24.0 ±2.8 (^a)</td>
</tr>
<tr>
<td>hCG</td>
<td>34.7 ±6.4 (^b)</td>
</tr>
<tr>
<td>Control</td>
<td>43.4 ±9.9 (^c)</td>
</tr>
</tbody>
</table>

Different letters signify significant differences among groups *(p<0.01)*
Premature CL regression %

Different letters signify significant differences among groups (p<0.01)

Results
**Premature CL regression**

**Progesterone concentration**

### Results

- **NaCl (regressed CL)**
- **NaCl (normal)**
- **GnRH**
- **hCG**

Graph showing the progesterone concentration over days for different treatments.
### Transferable Embryos

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Without ear implant</th>
<th>With ear implant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. does</td>
<td>Transferable embryos</td>
</tr>
<tr>
<td>GnRH</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>hCG</td>
<td>6</td>
<td>1.0 (0-6)</td>
</tr>
<tr>
<td>Control</td>
<td>6</td>
<td>1.0 (0-5)</td>
</tr>
</tbody>
</table>
Conclusion

- Synchronisation of LH surge optimal with GnRH

- Premature luteal regression became evident by day 4 after ovulation

- Both GnRH and hCG treatment significantly increased the incidence of premature CL regression

- No significant differences between GnRH, hCG and NaCl with regard to number of transferable embryos

- Substitution of hCG for GnRH as ovulation inducing agent did not solve the problem
Thank you to:
J.F. Beckers  (Stimufol®)
Pharmacia     (Dinolytic®)
Intervet      (Buserelin®, Chorulon®, Crestar®)