CORRELATION OF SERUM PROGESTERONE CONCENTRATION WITH NUMBER OF CORPORA LUTEA IN SUPEROVULATED ASSAM LOCAL AND BEETAL GOATS

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ABSTRACT
An experiment was conducted in five numbers of 2 – 3 years old healthy parous Assam local (AL) does, and another five numbers of Beetal (B) does of similar status to study the correlation of serum progesterone concentration with number of corpora lutea in superovulated goats. The goats were superovulated with Folligon (PMSG) and Chorulon (HCG) at the dose rate of 750 and 1500 I.U., respectively, with 2 ml of Iliren. In Assam local goats the numbers of corpora lutea (CL) significantly more (P < 0.01) than that of Beetal goats (12.80 ± 0.37 Vs 9.4 ± 1.46), however, the Beetal goats had significantly (P < 0.01) more numbers of matured follicles (10.00 ± 2.21) than Assam Local goats (4.4 ± 0.68). Serum progesterone concentration assayed following COAT-A-COUNT method of Radio Immuno Assay revealed positive correlation with total number of CL both in Assam Local and Beetal goats with significant positive correlation (r = 0.992) on day 6 of superovulatory estrus in Beetal goats.

Key words: Superovulation; Serum progesterone; Corpora lutea

INTRODUCTION:
Assam local goats are much popular among the rural farmers of Assam because of its unique qualities like early sexual maturity and prolificacy; however, they have poor growth rate and low milk yield in comparison to other Indian breeds of goat. To improve goat production in Assam, blending of characters from recognized breeds, like Beetal with Assam local, and producing elite goats at a faster rate is one of the solutions. To fulfill such objective, studying various aspects of ETT, like synchronization of estrus, superovulation, collection and cryopreservation of embryos for effective application of ETT in goat is necessary. It was also reported that the response of ovary to superovulatory treatment can be ascertain indirectly by estimation of serum progesterone concentration because serum progesterone concentration and number of corpora lutea has linear relationship (Appavu and Holtz, 1992). Therefore, the present experiment was undertaken to compare the superovulatory response and to study the correlation of serum progesterone concentration with number of corpora lutea in Assam local and Beetal goats following same superovulatory hormonal treatment.

MATERIALS AND METHODS
The present experiment was conducted in five numbers of 2 – 3 years old healthy parous Assam local (AL) does, and another five numbers of Beetal (B) does of similar status reared under semi-intensive system. The goats were treated with 750 I.U. of Folligon1, intramuscularly; on day 9-12 of estrous cycle followed by Iliren2, 0.392 mg (2 ml), intramuscularly, 24 hours post Folligon injection. Six hours post onsets of induced estrus, does were treated with 1500 I.U. of Chorulon3, intravenously. Oestrus of the treated animals was detected by a vasectomised buck. Laparotomy was performed on day 5-post onset of oestrus following the method described by (Agrawal et al., 1982; Chakravarty, 1995). Blood samples were collected by jugular venupuncture from the day of estrus to day 6 of induced estrus. Progesterone concentration was assayed following COAT-A-COUNT method of Radio Immuno Assay with kits procured from

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TABLE 1: Ovarian response and serum progesterone concentration in AL and B goats Following superovulation.

<table>
<thead>
<tr>
<th>Group</th>
<th>Matured follicle (Mean ± S.E.)</th>
<th>CL (Mean ± S.E.)</th>
<th>Progesterone Concentration (ng/ml) (Mean ± S.E.) Day following estrus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Mean ± S.E.)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>AL</td>
<td>4.4 ± 0.68</td>
<td>12.8 ± 0.37</td>
<td>1.8 ± 0.22</td>
</tr>
<tr>
<td>B</td>
<td>10.0 ± 2.21</td>
<td>9.4 ± 1.64</td>
<td>9.8 ± 1.90</td>
</tr>
</tbody>
</table>

Immunotech4. Statistical analysis were done by the methods described by Snedecor and Cochran; 1994.

RESULTS AND DISCUSSION

Number of matured Follicles: The total numbers (Table 1) of matured follicles (Mean ± S.E.) recorded in Beetal were significantly (P<0.01) higher (10.0 ± 2.21) than Assam local goats (4.4 ± 0.68). However, no significant difference was observed in numbers of matured follicles between the right and left ovaries in both the groups. The findings in respect of existence of significantly more nos. of matured follicles on the ovarian surface of superovulated Beetal goats might be due to insufficient dose level of HCG to cause ovulation of most of the matured follicles (Bhoge et al., 1998).

Number of CL: Total number (Table 1) of CL (Mean ± S.E.) recorded being significantly (P<0.05) higher (12.8 ± 0.37) in Assam local goats than Beetal goats (9.4 ± 1.46). However, the difference in superovulatory response between the right and the left ovary was non significant in both the groups under the present experiment. The response of AL goats in respect of ovulation performance was better, which could be due to adequacy of hormonal doses used for superovulation (Chakravarty, 1995) for exploring maximum nos. of embryos.

Serum progesterone concentration: In AL goats progesterone concentration (Table 1) was found to be increasing from day 0 of induced estrus (1.8 ± 0.22 ng/ml) to reach maximum on day 4 (10.8 ± 1.94 ng/ml). However, the progesterone concentration was found to be fluctuating during the experimental period from induced estrus with its peak concentration on day 3 (12.88 ± 1.73 ng/ml) in beetal goats. Serum progesterone concentration revealed positive correlation with total number of CL in both Assam Local and Beetal goats with significant correlation (r = 0.992) on day 6 of superovulatory oestrus in Beetal goats. Earlier reports of Appavu and Holtz(1992); Corclova and Jimenezk (1992) and Chakravarty et al. (2005) revealed prediction of recovery of embryos based on their findings on positive correlation that exist between serum progesterone concentration and numbers of CL in superovulated goats. It was also observed that the serum progesterone concentration (9.8±1.64 ng/ml) on the day superovulatory estrus significantly (p<0.01) higher in Beetal goats compared to Assam local goats (1.8±0.22 ng/ml) might be due to early ovulation of some of the matured follicles in Beetal goats.

REFERENCES:


