BLOOD PROGESTERONE AND ESTROGEN HORMONES
LEVEL DURING PREGNANCY AND AFTER BIRTH IN
IRAQI SHEEP AND GOAT

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(Received 14January 2009,Accepted 13March2009)

Keywords: progesterone , ELISA, pregnancy

ABSTRACT

Serum progesterone and estrogen concentrations were investigated during pregnancy and few days after birth. Blood samples were collected twice / month from 24 numbered animals ( 12 ewes and 12 does) . serum was isolated and kept under -20C untill hormonal analysis. Enzyme - Linked Immunosorbent assay (ELISA) using (ELISA Reader Dona 3200). Progesterone concentrations of pregnant ewes and does were showed steadily increased to reach 24.9± 2.5 ng/ml and 30.34± 2.3ng/ml in ewes and does, during 4th month and declined to 0.6 and 2.5 ng/ ml after birth in ewes and does, respectively. Estrogen hormone levels in ewes were increased significantly during pregnancy to maximum 98.7±4.3ng/ml by 5th month and sharply declined to 4.1±0.06 after birth. While in does estrogen level increased significantly and steadily to 1150.6± 6.23 pg/ml during last month of pregnancy and to 5.9± 0.4 pg/ml after birth. The present work indicated levels of progesterone hormone increased during 1st and 2nd months in ewes and does, while the significant increased from 3rd month on . Estrogen reach maximum concentrations during last month in doe Which higher about 11 times than that of ewes .It is useful means to diagnosis pregnancy of ewes and does by hormonal methods after mating 20-30 days.

INTRODUCTION

Iraqi sheep and goats are seasonally poly estrous and thus can breed the year round (1 and 2). In seasonal breeders there are number of factors which either stimulate or suppress the breeding activity it was there for considered necessary to measure reproductive hormones in small ruminant at different time of the year to determine seasonal and pregnancy effects(3). This information is required in order to increase reproductive efficiencies (4). During the estrous cycle plasma progesterone concentration was found to be 9.3 ng/ml (5) , and vary between 2 and 18 ng/ ml(6) . Estradiol 17beta level were reported varied from 120- 720pg/ ml(6). While Kakous, et
al. (7) recorded that the ewes with twins had higher concentrations of both steroid hormones than ewes with single fetus. Plasma estradiol levels rose from 205 during first month to 554pM/L by third month gestation until parturition(8). Roberts (9) reported the progesterone levels rise from 5ng/ml to 33ng/ml during 3rd months of pregnancy in doe. Also, progesterone was found to rise to 17nM/L by second months and maximal level was 21nM/L at last month of pregnancy (10). The present work is designed to examined the progesterone and estrogen concentrations in the blood of pregnant ewes and does and after birth.

MATERIALS AND METHODS
This study was conducted in farm of college of Agriculture Sulaimani University and Vet. College, Baghdad University. Animals estrous were regular detection before inseminated. Maternal peripheral blood samples were collected twice/month from 24 multiparous (12 ewes and 12 does). Serum samples were separated by centrifugation. Samples were kept at -20 until hormonal analysis. Serum progesterone and estrogen concentrations were examined by Enzyme-Linked Immunosorbent assay (ELISA) using (ELIAS kits and Reader- Dana-3200). Progesterone measurements was recorded in ng/ml and pg/ml for estrogen concentrations. The least significant difference (LSD) was used to compare the significant differences between mean. SAS/STAT users guide for personal computers SAS.

RESULTS
The hormones assay were pooled on a monthly basis. The tables(1&2) give progesterone and estrogen results in 24 adult ewes and does which were showing cyclic estrous and subsequently became pregnant and produced normal new borne. Table 1. revealed that the serum progesterone levels were significantly P< 0.01 during the 4th month compared to that of first, second and after birth. While estrogen levels were showed significantly steadily increased during pregnancy and declined sharply after birth. In goats Table -2 shows that the serum progesterone levels had the same levels as in ewes but higher during third, fourth and fifth months of pregnancy as well as after birth. Estrogen hormone in does was steadily increased during pregnancy to reach 1150.6±6.23 pg/ml, which higher about 11 times than that of ewes, and declined after birth to 5.89±0.4 pg/ml.
Table – 1. Serum progesterone (ng/ml), estrogen (pg/ml) hormones levels during pregnancy and after birth in ewes. X ± S.E. (n=12).

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Months</th>
<th>After birth</th>
<th>LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
</tr>
<tr>
<td>Progesterone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>6.70</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>±</td>
<td>1.01</td>
<td>± 0.75</td>
<td>1.53</td>
</tr>
<tr>
<td>Estrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>10.30</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>±</td>
<td>1.37</td>
<td>± 3.90</td>
<td>±</td>
</tr>
</tbody>
</table>

Different litters indicate a significant difference among columns (P<0.01).

Table – 2. Serum progesterone (ng/ml), estrogen (pg/ml) hormones levels during pregnancy and after birth in does. X ± S.E. (n=12).

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Months</th>
<th>After birth</th>
<th>LSD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
</tr>
<tr>
<td>Progesterone</td>
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<td></td>
</tr>
<tr>
<td>B</td>
<td>8.10</td>
<td>B</td>
<td>C</td>
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<tr>
<td>±</td>
<td>0.50</td>
<td>± 0.71</td>
<td>±</td>
</tr>
<tr>
<td>Estrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>71.13</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>±</td>
<td>0.56</td>
<td>± 2.01</td>
<td>±</td>
</tr>
</tbody>
</table>

Different litters indicate a significant difference among columns (P<0.01)

**DISCUSSION**

Table 1. In ewes, Progesterone levels rise starting about day 50 of pregnancy, while placenta secretes little progesterone. The corpus luteum made a considerable contribution to the total progesterone produced by the mother through a large part of gestation (11). However, the placenta could make a major contribution to total progesterone production in the pregnant ewes (12). An increase in inactive 17 alpha, 20 alpha dihydroxy progesterone is reported at the time of progesterone falls (12). As well as, late in gestation placental permeability to steroid changes with advancing pregnancy (13 and 4). Thorburn and Chollis (14) referred lower level of plasma progesterone during pregnancy in ewes, While (15 and 16), also reported lower plasma progesterone concentrations in ewes than that reported in this work, While in goats they measured higher levels for estrogen during pregnancy. The levels of hormone
depend upon a varity of factors including breed, secretion, metabolic rate number of fetuses and assay system used.

Table 2. In goats maternal estrogen levels are higher than in sheep and increased steadily throughout pregnancy to the highest concentration during last month preceding delivery. In intact pregnant goats, maintenance of corpus luteum function depend on the maternal pituitary, and placental lutotrophin (3). A luteotrophic rate has been suggested for placentl lactogen , which increase late in gestation (13). Similar estrogen blood concentrations observations was reported by (3). Banzer (16) concluded that The major maternal estrogen are esterone and estradiol 17 alpha which biological activity lower than estradiol 17 beta. Variable concentrations were reported about the blood progesterone and estrogen in pregnant sheep and goats .(17) and(18). Conclusion. It is useful means for early diagnosis of pregnancy in ewes and does that have not returned to estrous after mating.
REFRENCES