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Sex steroid receptor expression in the oviduct and uterus of sheep with estrus synchronized with progesteragen or prostaglandin analogues

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Abstract

The objective of this study was to investigate differences in the expression of estrogen receptor- α (ER α), progesterone receptor (PR) and the proliferative indexes (Ki-67), in the uterus and oviduct of sheep with estrus synchronized either by prostaglandin analogues (Group PA, $n = 27$) or by treatment with progesteragens (Group P, $n = 29$) on days 4 and 7 (day 0 = estrus), when the embryos were collected. Immunohistochemical methods were used to quantify ER α , PR and Ki-67 in six superficial and deep compartments in the uterus and oviduct. The expression of ER α was significantly ($P < 0.01$) lower in progesteragen treated ewes than in prostaglandin analogues treated group in the luminal epithelium, superficial glands and superficial stroma in the uterus on day 4. The expression of PR was significantly

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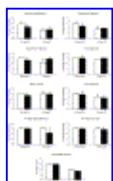
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lower in progesterone treated ewes than in the PA Group in the superficial gland ($P < 0.05$) in both days studied. The lowest expression of PR was observed in the luminal caruncular epithelium and superficial glands in both treatments, obtaining the lowest levels on day 4 ($P < 0.05$). There were significant differences between days 4 and 7 in the Ki-67 immunostaining in the luminal epithelium ($P < 0.01$) and superficial glands ($P < 0.05$). A higher cell proliferation was observed in the uterine epithelium ($P < 0.05$) on day 4 in the animals treated with progestagens. Results indicate that sheep with synchronization of estrus with progestagens showed a reduction of ER α and PR protein expression in most of oviductal and uterine cells.

Keywords: Estrus-synchronization; Ewes; Steroid hormone receptors; Proliferative cell indexes

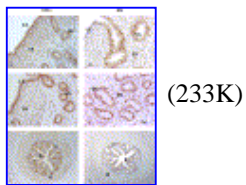
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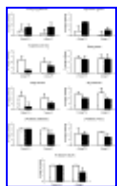
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Fig. 1. Average immunoreactivity for ER α on day 4 (●) and day 7 (■) post-estrus in ewes treated with prostaglandin analogues (Group PA) and progestagens (Group P) in the different uterine and oviductal compartments. Results are expressed by means \pm standard errors.



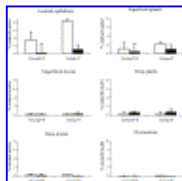
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Fig. 2. Immunohistochemical localization of ER α and PR in uterus and oviduct of ewes treated with prostaglandin analogues (Group PA) and progestagens (Group P) on days 4 and 7 post-estrus (uterus: LE, luminal epithelium; SS, superficial stroma; SG, superficial glands; DG, deep glands; DS, deep stroma; M, myometrium; oviduct: E, epithelium; S, stroma; M, muscle). Streptoavidin–biotin complex method. (A) ER α endometrial detection in Group P on day 4 (200 \times). (B) ER α endometrial expression in Group PA on day 4 (200 \times). (C) ER α oviductal expression in Group PA on day 4 (100 \times). (D) PR endometrial expression in Group P on day 7 (200 \times). (E) PR endometrial expression in Group PA on day 4 (200 \times). (F) PR oviductal immunoreactivity in Group P on day 7 (100 \times).



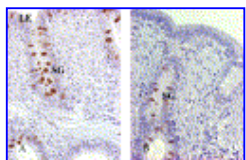
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Fig. 3. Average immunoreactivity for PR on day 4 (●) and day 7 (■) post-estrus in ewes treated with prostaglandin analogues (Group PA) and progestagens (Group P) in the different uterine and oviductal compartments. Results are expressed by means \pm standard errors.



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Fig. 4. Percentage of stained nuclei that were positive for Ki-67 on day 4 (●) and day 7 (■) post-estrus in ewes treated with prostaglandin analogues (Group PA) and progestagens (Group P) in the different uterine compartments. Results are expressed by means \pm standard errors.



(134K)

Fig. 5. Immunohistochemical localization of Ki-67 in ewe endometrium (LE, luminal epithelium; SG, superficial glands). Streptoavidin–biotin complex method. (A) Group P, higher expression of Ki-67 in luminal epithelium on day 4 (400 \times). (B) Group PA on day 7 (200 \times).

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