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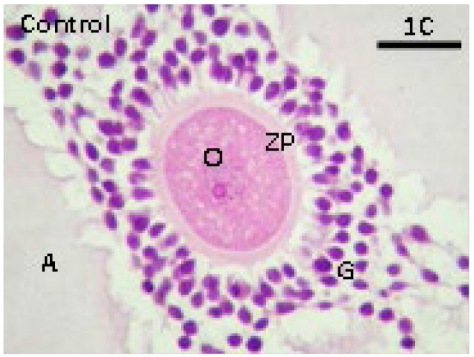
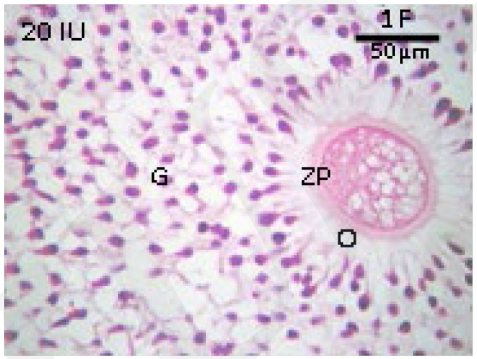
Induction of follicular luteinization by equine chorionic gonadotropin in cyclic guinea pigs

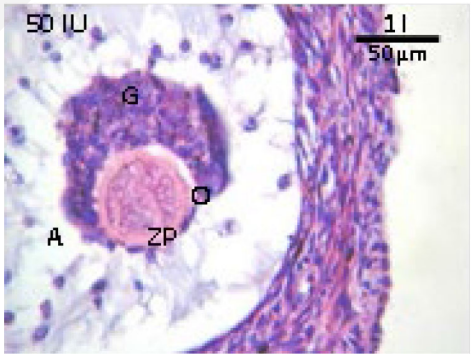
Key words: Equine chorionic gonadotropin (eCG), Guinea pig, Follicular development, Proliferation cell nuclear antigen (PCNA), Steroidogenic acute regulatory protein (StAR)

Effects of eCG on follicular development

Three groups of guinea pigs (n=12) were administrated subcutaneously with saline, 20 or 50 IU of eCG, respectively on cyclic day 12 (Day 1 = vaginal openings). Ovaries were collected at 4 and 8 days after administration (6 animals per group each time).

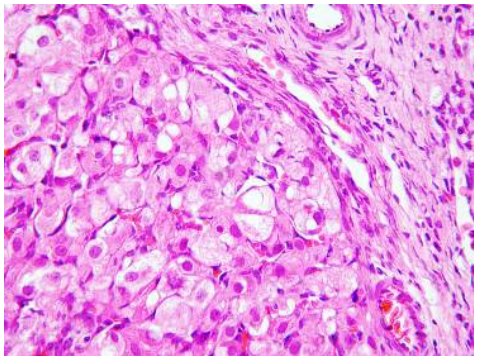


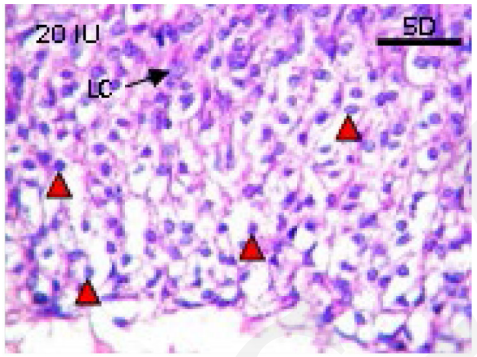


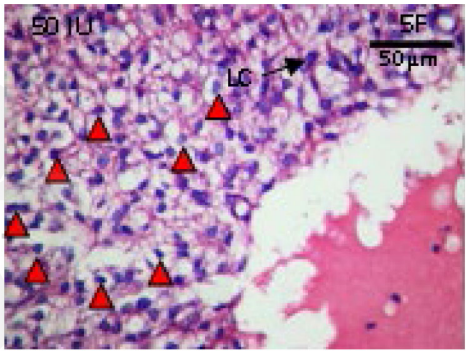


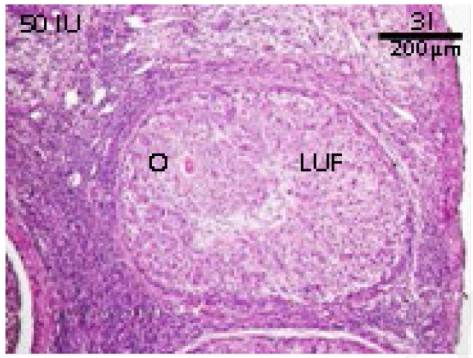
- In control group, the granulosa cells were neatly-arranged outside the zona pellucida (Fig. 1C) .
- In 20 IU group, the polygonal-shaped granulosa cells were not granular Cell proliferation and senescence (Fig. 1F).
- In 50 IU group, differentiation of the inner membrane cells started to occur (Fig. 1I).

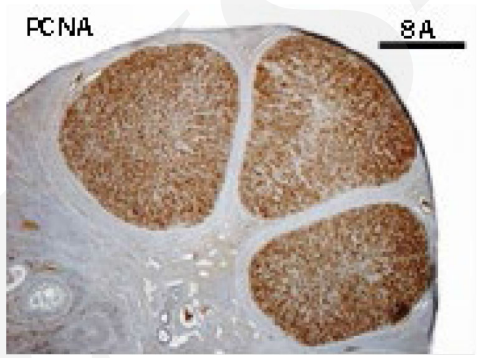
Effects of eCG on cell differentiation and proliferation











- In 50 IU group, luteinized unruptured follicles (LUFs) appeared in the ovaries (Fig. 3I), a CL-like structure was formed in the differentiated cells thereafter (Fig. 5F).
- Like normal corpora lutea, PCNA was obviously expressed in luteinized follicles after eCG administration (Fig. 8A and 8D).

Research Priority and Perspectives

The eCG in cyclic guinea pigs functions similar to that of luteinizing hormone (LH), but not follicle-stimulating hormone (FSH).

Our experiments together indicate that eCG administration can induce follicular luteinization but not superovulation in guinea pigs, and we re-confirmed follicular luteinization by immunohistochemical observation of PCNA and StAR. The mechanism of follicular luteinization by eCG remains further study.