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Changes in Serum Levels of Anti-Mullerian Hormone and Ovarian Steroids in Barki Sheep during Follicular and Early Luteal Phase of Estrous Cycle

Reham S Waheeb

Department of Theriogenology, Faculty of Veterinary Medicine, Alexandria University, Edfina-Behera, Egypt

*Corresponding author: rwaheeb@alexu.edu.eg

Abstract

Although Anti-mullerian hormone (AMH) has been extensively studied in ruminants in the context of assisted reproductive techniques (ART), few data are available on its physiological levels during estrous cycle in adult ewes. Therefore, the aim of the current study was to investigate the daily secretion pattern of AMH, progesterone (P4), estradiol17-β (E2) during follicular and early luteal phase in cyclic Barki ewes. After confirmation of cyclicity using ultrasonography, a group of ewes (n=10) were treated with GnRH-7ds-PGF2α to synchronize their ovarian activity. Blood samples were collected and ultrasonographic scanning of ovaries was performed 2 days before PGF2α injection, on the same day of its injection (D 0), then continued daily until day 7 after treatment. Changes in serum levels of AMH, P4, and E2 were determined and number of pre-ovulatory follicles (2-5mm diameter) was recorded. Results showed that AMH levels decreased after PGF2α injection with lowest significant concentrations (0.86 ± 0.05 ng/ml) were recorded on day 2 ($P < 0.01$). Whereas it increased on day 3 until day 5 then declined again thereafter. Serum AMH levels were positively correlated ($P < 0.001$) with number of small/medium antral follicles and P4 ($r = 0.88$, and $r = 0.41$ respectively), while it was negatively correlated with E2 ($r = -0.74$, $P < 0.001$). In conclusion, the presented work showed that AMH followed a dynamic profile during follicular and early luteal phase of adult ewes. The noticed fluctuations in AHM level could hold a clinical usefulness in reproductive management programs of sheep, as low AMH levels were associated with terminal follicular growth. Accordingly, an optimized estrous synchronization protocols can be designed.

Key words: Adult ewes, Anti-mullerian hormone, Follicular phase, Estrous cycle



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