

## CORRELATION BETWEEN FOLLICULAR FLUID COMPOSITION AND OOCYTES RECOVERY RATE, AND IN VITRO MATURATION

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This study aimed to evaluate the correlation between follicular fluid composition collected from small or large follicles of ovaries with or without corpus luteum and rates of recovery, quality and *in vitro* maturation of bovine oocytes. Ovaries with and without corpus luteum were collected from slaughtered cows. On each ovarian surface, all visible follicles were measured and classified into small (SF $\leq$ 8 mm) and large (LF $>$ 8 mm) follicles. Follicular fluid and oocytes were aspirated from small and large follicles of ovaries with and without corpus luteum. Oocytes were classified and only acceptable oocytes (good quality) were *in vitro* matured. Concentration of progesterone, estradiol-17 $\beta$ , testosterone and lactic acid in follicular fluid were determined. Results showed that follicular fluid of large follicles of ovaries without corpus luteum (LFCL) showed significantly (P $<$ 0.05) the highest estradiol-17 $\beta$  and testosterone concentrations (128.38 and 29.83 ng/ml), the lowest lactic acid concentration (86.5 mg/dl) and lower progesterone concentration (46.16 ng/ml). Also, oocytes of LFCL showed significantly (P $<$ 0.05) the best recovery rate (85.8%), acceptable quality (81.97%), and cytoplasmic (80.97%) and nuclear maturation (79.18%) rates. Among the follicular fluid contents, only testosterone level correlated (P $<$ 0.001) negatively with lactic acid content (r=-0.792). Follicular fluid concentration of lactic acid showed negative correlation (P $<$ 0.001) with each of recovery (r=-0.741), acceptable quality (r=-0.919), cytoplasmic maturation (r=-0.934) and nuclear maturation (r=-0.906) rate. Results of stepwise multiple regression of oocyte quality on follicular fluid composition indicated that lactic acid concentration was the 1<sup>st</sup> independent factor entering the multiple regression equation (R<sup>2</sup>= 84.4%), and about 74.9% of the variation in oocyte quality was caused by variation in testosterone concentration (2<sup>nd</sup> independent factor).

In conclusion, choosing ovarian status (without corpus luteum) and follicular size (large) is the 1<sup>st</sup> step for obtaining higher successful maturation rate of oocytes recovered from slaughtered cows based on oocytes quality.

**Keywords:** Cattle, corpus luteum, follicles, diameter, follicular fluid, maturation