

## Effect of Ghrelin on in vitro nuclear maturation and subsequent embryo development of immature Bovine Oocytes.

### ABSTRACT

Development of efficient culture system to support embryonic development would be valuable when percentage of produced embryos reaching to the blastocyst stage is important. However, the rate of bovine embryo production in vitro is still lower than expected. Present study was performed to investigate the effect of ghrelin on nuclear maturation and subsequent bovine embryo development in vitro. Cumulus-oocyte-complexes were collected from slaughterhouse ovaries and randomly allocated in each treatment groups. Five different concentrations of ghrelin (0, 5, 50, 500 and 1000 ng mL<sup>-1</sup>) were added to the in vitro maturation medium (Hepes-buffered medium 199+fetal calf serum+gonadotrophins+insulin+antibiotics). The proportion of oocytes developed to metaphase II stage was significantly increased at 5 and 50 ng mL<sup>-1</sup> ghrelin (86.32±3.38 and 89.77±2.92%, respectively). The result also indicated that adding high concentration of ghrelin adversely affect ( $p<0.05$ ) the nuclear maturation rates of bovine oocytes. However, the subsequent embryo development was not significantly affected by addition of ghrelin to the IVM medium. This study showed that inclusion of 5-50 ng mL<sup>-1</sup> ghrelin in maturation medium may have beneficial effects on nuclear maturation of bovine oocytes in vitro.

**Keyword:** Ghrelin; Nuclear maturation; Bovine oocytes; In vitro embryo development; Bovine.