Original Research Article

The effect of relaxin supplementation of in vitro maturation medium on the development of cat oocytes obtained from ovaries stored at 4 °C

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Abstract

Relaxin is a member of the insulin-like family of hormones that promotes growth in a number of reproductive tissues, including the granulosa and theca cells. Cat oocytes collected from cold-stored ovaries remain capable of maturing in vitro, but the developmental ability of the oocytes decreases after 24 h of cold storage. To improve the developmental ability of cat oocytes from cold-stored ovaries, we investigated the effect of relaxin supplementation of maturation medium on their meiotic ability and subsequent development. Cat oocytes were collected from ovaries stored at 4 °C for one day and cultured in maturation medium supplemented with different concentrations (0, 10, 20, and 40 ng/ml) of relaxin for 24 h. They were then fertilized in vitro for 12 h with frozen-thawed spermatozoa. After in vitro fertilization, the zygotes were cultured in synthetic oviduct fluid medium for 8 days. There were no significant differences in the maturation rates and glutathione contents of oocytes among the groups, irrespective of relaxin supplementation. The rate of blastocyst formation from oocytes matured with 10 ng/ml relaxin (16.0%) was higher (p < 0.05) than that from oocytes matured without relaxin (5.9%). Our findings indicate that supplementation of 10 ng/ml relaxin into maturation medium may improve blastocyst formation of cat oocytes after in vitro fertilization.

Keywords

Cold storage; Feline; IVF; IVM; Development