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Effect of duration for oocyte growth on acquisition of meiotic competence of porcine oocytes derived from early antral follicles

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### **Introduction**

In vitro growth of growing oocytes (GOs) has a potential to supply mature oocytes for reproductive medicine and animal reproduction. For in vitro growth of mammalian oocytes, a culture period is one of important factors to obtain meiotic competence. However, proper culture period for porcine GOs has not been determined to attain their meiotic competence.

### **Materials and Methods**

Porcine GOs were obtained from early antral follicles, and were cultured for 10, 12 and 14 days. After the culture, meiotic competence, intracellular amount of p34<sup>cdc2</sup>, chromatin configuration and fertilization competence of oocytes were assessed.

### **Results and Discussion**

There was no significant difference in the diameter of ooplasm among culture periods 10, 12, and 14 days (118.1 - 119.3  $\mu$ m). The maturation rate of oocytes after 10-day culture (21.1%) was lower than those of oocytes after 12- and 14-day culture and fully grown oocytes (FGOs) (51.9, 57.6 and 51.7%, respectively). Intracellular amount of p34<sup>cdc2</sup> in oocytes after 10- and 14-day culture was larger than that in GOs, and similar to that in FGOs. The rate of oocyte with surrounded-nucleolus chromatin after 10-day culture (78.4%) was

significantly lower than those of oocytes after 14-day culture and FGOs (93.6 and 95.1%, respectively). After intracytoplasmic sperm injection, about 33% of oocytes after the culture extruded second polar body and formed two pronucle. Our results suggested that porcine GOs require at least 12-day culture to acquire meiotic competence.