

Involvement of Meiotic Maturation of Oocytes in Promoting Granulosa Cell Proliferation

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The effect of porcine oocytes on the proliferation of rat granulosa cells was studied in the heterologous culture system. Morphologically high quality oocytes showed a more potent stimulatory effect on DNA synthesis in granulosa cells than low quality oocytes. This stimulatory effect of porcine oocytes was enhanced by FSH and cAMP, but by neither transforming growth factor- nor tumor necrosis factor-. Maturation of porcine oocytes in vitro attenuated the stimulatory effect of them on granulosa cell DNA synthesis. In addition, rat oocytes also exhibited similar facilitatory effect on DNA synthesis in rat granulosa cells.

These results suggest that a soluble factor(s) from oocytes, of which secretion is dependent on their meiotic progression, can stimulate proliferation of rat granulosa cells in the heterologous culture system. The molecular nature of the factor(s) remains to be elucidated.