عنوان مقاله:

Supporting the in vitro Expansion of Human Cumulus Cells as an Initial Step for Culturing the Ovarian Follicles and Assembling an Artificial Ovary

محل انتشار:

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خلاصه مقاله:

Background: Assembling an artificial ovary needs supporting the in vitro growth of cumulus cells, and finally, follicles. This study aimed to determine the appropriate cocktail for culture of cumulus cells (CCs).Methods: CCs were collected from healthy women and cultured with ۹ cocktails of basal media, supplemented with ۱۰% and ۲۰% fetal bovine serum (FBS) and ۱% and ۲% human serum albumin (HSA). Ovarian cells were isolated from cortex, medulla, and hilum, and their conditioned media (CM) were collected. Expression of GDF۹ in ovarian cells was evaluated. CCs were treated with various concentrations of CMs from ovarian cells and mesenchymal stem cells. Also, they were cultured with various concentrations of supplements including L-Glutamine, bovine serum albumin (BSA), HSA, insulin transferrin

selenium (ITS), Follitropin alfa, and Pregnyl. Also, they were treated with various concentrations of follicular fluids (FFs), collected from patients with different infertility etiologies. Finally, CCs proliferation and culture stability were evaluated.Results: All the ovarian cells expressed GDF۹. DMEMF۱۲ + ۲۰% FBS was the most suitable cocktail for CCs. ۲۰% FBS was superior to ۱۰% FBS. HSA alone could not support the growth of CCs. The CMs of (cortical + hilar + medullar) cells and FFs from healthy women caused higher CCs proliferation. ۱۷ mM/l L-Glutamine, ۲۴ mg/ml BSA, ۲۰ mg/ml HSA, ۱۰ ng/ml ITS, ۳۰۰ mIU/ml Follitropinα, and ۳.۵ IU/ml Pregnyl led to higher CCs proliferation.Conclusion: Supplementation of the basal medium with CMs, serums, FFs, hormones, ITS and L-Glutamine, can better support the .culture of CCs

کلمات کلیدی:

Cumulus Cells, In vitro Culture, Follicles, Culture Medium, Supplements