

عنوان مقاله:

The effect of cytoplasm microinjection in embryo development and expression of HOXA10 in mouse

محل انتشار:

هشتمین کنگره بین المللی و جشنواره دانشجویی طب تولید مثل و سومین کنگره بین المللی ژنتیک تولید مثل (سال: 1398)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

Background: One of the main technologies for the genetic investigations is creating transgenic mice. This goal has recently been achieved by pronuclear microinjection of plasmid DNA into fertilized egg. The survival of the embryo and the success rate in this method is very low. **Objective:** Therefore, the aim of this study was to investigate the effect of cytoplasm microinjection method in embryonic development and expression of HOXA10 as an effective gene in fertility and embryo viability. **Materials and Methods:** Female mice were superovulated with pregnant mare serum gonadotropin followed by human chorionic gonadotropin. For IVF, 15-16h after hCG injection, cumulus oocyte complexes were poised in improved HTF medium. Spermatozoa were collected from the caudal epididymis. Cumulus-oocyte complexes were inseminated with capacitated spermatozoa in a humidified atmosphere of 5% CO₂, 95% air at 37°C. Six hours after insemination, the fertilized oocytes cultured. IVF embryos, zygotes, divided into two groups: the first group was control and the second was plasmid (Without any gene) injection in cytoplasm. After 24 and 96 hr of culture, the number of two cell and expand blastocysts rates were recorded. Expression of HOXA10 assessment by quantitative realtime PCR (qPCR blastocyst stage). **Results:** The results obtained from the analysis of embryo development, a slight decrease was observed in the percentage of fertilization and blastocyst in the cytoplasm microinjection compared to the control group (82.38 ± 5.5 , 53.77 ± 6.9 vs. 96.19 ± 1.03 , 61.50 ± 5.08 control) but this decrease was not significantly different. Degeneration rate in cytoplasm micro injection was significantly higher than the control group (42.59 ± 5.5 vs. 6.40 ± 2.6). Real Time PCR results showed the amount of HOXA10 gene expression in cytoplasm microinjection group has decreased relative to control. **Conclusion:** Considering the simplicity of this method in comparison to the pronuclear microinjection and based on the results, which showed that this method has a good efficiency, the small difference in results with the control group can be due to mechanical manipulation, but it can be suggested that this method is a good alternative to pronuclear microinjection.

کلمات کلیدی:

Microinjection, HOXA10, Mouse, Embryo development

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