

Original Paper

Effect of exogenous Granulocyte Colony-Stimulating Factor on ovulation and pregnancy rate in NMRI mice

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Abstract

Background and Objective: Granulocyte colony-stimulating factors (G-CSF) and its receptor express in developing follicles, fetal and reproductive tissues. The serum G-CSF concentration significantly increases during the ovulatory phase in comparison with other phases, so G-CSF may have an important role in ovulation and the early cross-talk between mother and conceptus in both human and animal models. This study was done to evaluate the Effect of exogenous G-CSF on ovulation and pregnancy rate in NMRI mice.

Methods: In this experimental study, 40 mature female and 10 male NMRI mice were randomly allocated into the control and treatment groups. All Ovaries were stimulated with intraperitoneal injections (IP) of 10 IU PMSG and after 48 hour by 10 IU hCG per mouse. The treatment group were recieved G-CSF (50µg/kg i.p.), at the time of PMSG administration, while the control group had the same volume of normal saline instead of G-CSF at the same time. 16-18 hours post-hCG administration, twenty female mice of both groups were sacrificed by cervical dislocation and ovulated oocytes were assessed. On day 16 post coitus, the rest of female mice of both groups were scarified for withdrawing their fetuses to determine the effect of G-CSF on pregnancy rates.

Results: The ovulation rate in the treatment group (18.5 ± 1.25) were significantly more than that of control (12.1 ± 1.32) ($P < 0.05$). The number of fetuses had no significant difference between control and treatment groups.

Conclusion: This study demonstrated that exogenous G-CSF may affect on folliculogenesis and ovulation but the following pregnancy outcome was not impressed.

Keywords: Granulocyte colony-stimulating factor, Ovulation, Mouse

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