concentration of H_2O_2 could induce oxidative stress in spermatogonial stem cell during in vitro culture.
Conclusion: According to this study, 50 μM concentration of H_2O_2 can cause cell death lower than 50% of total number of cells and increase oxidative stress in cultivation of SSCs. This model is a suitable tool for studying of some new antioxidant drugs.
Key words: *Spermatogonial cells, Oxidative stress, Hydrogen peroxide, Stem cell, In vitro culture.*

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Effect of different concentrations of GDNF on proliferation and differentiation of goat spermatogonia

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Introduction: The access to sufficient number of undifferentiated spermatogonia in vitro is a prerequisite for the study of their regulation and further biomanipulations. In spite of the biologic significance of undifferentiated type A spermatogonia, little is known about their behavior, properties and growth requirements. The present study was aimed to investigate the effect of different concentrations of GDNF on colony characteristics and purification rate of goat undifferentiated type A spermatogonia.
Materials and Methods: One month goat testes were transported to the lab in transition media at 37°C. Donor cells were isolated through two-step digestion method and purified by discontinuous percoll density with different gradients. The purified cells were propagated in culture media supplemented with different concentrations of GDNF (0, 20 and 40 ng/ml) for 2 weeks. At the end of each week, the morphological characteristics of colonies and purification rate of undifferentiated type A spermatogonia were evaluated by immunocytochemical staining.
Results: The number and size of colonies in group containing 40ng GDNF were significantly ($p<0.01$) higher than corresponding values in the other groups (0 and 20 ng/ml). Higher concentration of GDNF induced logarithmically self-renewing divisions of type A spermatogonia and decreased the number and chain length of colonies into 4-5 clumps. In immunocytochemical evaluation, the proportion of c-kit and PGP9.5 positive cells were significantly ($p<0.001$) higher in groups containing 0 and 40 ng/ml GDNF, respectively.
Conclusion: The medium including 40 ng/ml GDNF was superior with respect to the population of undifferentiated type A spermatogonia, self-renewal of goat spermatogonia, and its propagation in culture system.
Key words: *GDNF, Spermatogonia, PGP9.5, c-kit*

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Goat spermatogonial xenotransplantation into the mouse testes

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Introduction: Germ cell transplantation apart from its application as an alternative strategy in producing transgenic livestock with higher efficiency has a potential application in individuals with azoospermia and in pre-pubertal males. The present study was aimed to investigate transplantation efficiency of goat germ cells into the mouse testes as a recipient of xenogenic sperm.
Materials and Methods: One month old goat testes were subjected to two-step digestion method and the spermatogonia were purified by using discontinuous percoll density gradients. Adult C57BL/6 mice, 6 weeks after receiving an injection of busulfan (30 mg/kg) to deplete endogenous germ cells, were used as recipient mice. The spermtogonia (450×10^3 cells/30μl/each injection) was transplanted into the rete testis of one testis of each recipient mice; the other testis served as control. Testis capsular thickness, tubular diameter and cell viability were evaluated before and after injection. The testes of busulfan-injected mice were recovered, fixed, and examined for histological and immunohistochemical staining (using an antibody against PGP9.5) after 80 days.
Results: The capsular thickness was increased and the walls of the majority of the seminiferous tubules became thinner after busulfan treatment because of the depletion of premeiotic and meiotic germ cells. Donor goat spermatogonia, PGP.5 positive round cells with spherical big nucleus, were able to survive and colonize in depleted recipient's testis after 80 days.
Conclusion: Mice can serve as a suitable model for development and evaluation of spermatogonial transplantation techniques in goat.
Key words: *Spermatognia, Transplantation, Goat, PGP9.5.*

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hCG regulates human endometrial epithelial cell adhesion through L-selectin ligand, MECA-79

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