ANTIAPOPTOTIC AGENT SPHINGOSINE-1-PHOSPHATE (S1P) PROTECTS AGAINST ISCHEMIC REPERFUSION INJURY OF VITRIFIED MURINE OVARIAN GRAFTS
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Objectives: Significant follicle loss of frozen ovarian graft is unavoidable due to ischemic reperfusion injury. We aim to evaluate the protective effect of antiapoptotic agent S1P on vitrified murine ovarian tissue after transplantation.

Materials and Methods: 3-week-old sexually immature female FVB mice were randomly assigned to four groups: fresh, control (without S1P), 0.5mM S1P and 2mM S1P. The ovaries were immersed in S1P solution for one hour and then cryopreserved by modified vitrification (solid surface vitrification). The frozen-thawed ovaries were autotransplanted under the dorsum muscle of the animals for 10 days. The ovaries were analyzed the apoptosis-related genes caspase-3 and c-myc after vitrification and after transplantation 10 days by real-time quantitative PCR. AMH as a biomarker for ovarian reserve and follicle counts were compared 10 days after transplantation. All data were expressed as mean ± SEM and analyzed by univariate analysis of variance (ANOVA). P< 0.05 was considered statistically significant.

Results: The mRNA expression of caspase-3 and c-myc of the ovarian tissue shows no significant difference between the four groups after vitrification, but significantly up-regulate after transplantation in the control group. As for the ovarian reserve, AMH levels show significantly higher in the S1P groups than in the control group but lower than the fresh group, so does the effect in the primordial follicle pool.

Conclusion: S1P protects against ischemic reperfusion injury of vitrified ovarian grafts rather than vitrification processes.