ABSTRACT

Stem cells represent a unique cell source with potential usage in regenerative medicine and organ transplantation. As is known, spermatogonial stem cells are unipotent giving rise to a single cell type, which is sperm. Pluripotency was achieved by isolation and cultivation of these testicular stem cells in a number of researches. Testicular pluripotent stem cells differentiated in conditions *in vitro* to derivatives of all three germ layers identically as embryonic stem cells. The aim of this thesis is to characterize stem cells and summarize the findings of testicular stem cell research. The main focus of this thesis is on studies of cultivated pluripotent stem cells derived from mouse and human testes and their ability to differentiate under determinate conditions into the cells of ectoderm, mesoderm and endoderm.