

Spermatogonial stem cells are unipotent male germ cells which provide spermatogenesis during the whole life. In 2004, an important experiment was conducted. During in vitro cultivation mouse spermatogonial stem cells gained the characteristics of embryonic stem cells, pluripotency by all means. Those cells had the feature to spontaneously differentiate into all three germ layers, endoderm, ectoderm and mesoderm. They also could pass its genetic information to the next generation and they could give rise to teratomas. By this event, experiments started on other vertebrates including rodents, domestic animals and also human. Differentiation of these cells can be directed in vitro to generate specific cell types. On base of these facts, spermatogonial stem cells are alternative source of pluripotent cells which possess many applications in life sciences. The purpose of this thesis is to summarize actual knowledge about differentiation potential in vitro of spermatogonial stem cells in higher vertebrates and try to identify tendencies which they prefer during differentiation, if they exist.