Abstract:

Embryonic development is sensitive to environmental changes. These changes may lead to changes in the embryonic programming. Changes in programming embryos can occur due to inadequate nutrition, stress, treatment with chemicals and also due to diabetes. Epigenome reacts sensitively to environmental factors regulating gene transcriptional activity. Changes in the epigenome lead to a changes in gene expression, which can have a negative impact on the physiology and metabolism of organism. Maternal diabetes may alter embryonic and fetal development and may result in diabetic embryopathy. Furthermore, maternal diabetic enviromental plays an important role in the predisposition of offspring to a number of chronic diseases later in life. The offspring of diabetic pregnancies demonstrate differences in metabolic, cardiovascular, and inflammatory variables, compared to the offspring of nondiabetic mothers. This thesis summarizes the genetic and epigenetic factors involved in the development of diabetic embryopathy and in the embryonic programming.

Key words: *Diabetes mellitus*, diabetic embryopathy, transcriptional regulation, genetic and epigenetic factors , embryonic programming, genome