If gravid women suffer from diabetes, their unborn children have 10x higher risk of development of malformation, prenatal and postnatal death and post partum complications than children of women belonging to healthy population. The main and very controversial potential teratogenic factors are glucose and insulin. However, there are very ambivalent opinions on which one of these two substances causes damage to embryo. Therefore, the aim of this diploma thesis was to contribute to solving of this problem and test direct embryotoxicity of insulin and glucose. For solving of this issue, the so-called CHEST. The principle of this method is creation of a window in eggshell and consequent subgerminal or intraamnial application of the substance being tested. Embryos were tested from the second until the sixth incubation day. Firstly, two types of insulin were injected. Injected doses varied between 3µg/3µl to 0,003µg/3µl. Then glucose was tested, with dosage of 300µg/3µl and 30µg/3µl. Embryotoxic effect was detected for both types of insulin. The beginning of embryotoxicity line of insulin’s lies between the dosage of 0,03µg/3µl and 0,003µg/3µl. From embryotoxic effect, death of embryos predominated over development of congenital malformations. Only after application on the second incubation day, there was increased occurrence of malformations that are described as syndrome of caudal regression. Glucose did not show any embryotoxic effect, not even in the highest tested doses. In the pilot study, we tested interaction between injection of glucose and consequent injection of insulin. Injected dosage of glucose was the same for both insulin’s - 30µg/3µl, testing dosages of insulin Insulan Basal were 3µg/3µl to 0,03µg/3µl, and of insulin Insuman Rapid 0,3µg/3µl to 0,003µg/3µl. Glucose, if applied separately, didn’t show any embryotoxic effects; however, in interaction with insulin, it was able to significantly increased its embryotoxic effect, at least by one order of magnitude.