

Summary

The aim of this project was to study how exposure to different kinds of estrogen-like compounds, during embryogenesis in chickens, influences the histological outcome in the gonads and the gene expression in the liver. The chicken embryos were exposed from day four until day eighteen. Then they were put to death and the gonads were examined by the naked eye and the left gonad was removed and fixed for subsequent histological investigation. Liver samples were collected for gene expression studies by qPCR. Tissue was removed from all the embryos for sex determination by PCR. The histological sections were examined in microscope, photographed and then the cortex area was determined.

In this project 17- β -estradiol was used as a positive control. The synthetic estrogen Ethinyl estradiol that activates both estrogen receptor- α and - β was used in two different concentrations. Other compounds tested were PPT, an estrogen receptor- α agonist, and MPP an estrogen receptor- α antagonist. Furthermore, the combination of an agonist and an antagonist was tested when putting together PPT and MPP. The estrogen receptor- β agonist DPN was also tested.

The male chicken embryos that were exposed to 17- β -estradiol, Ethinyl estradiol and PPT did show a statistically significant increase in cortex area of the left testicle, which gave it an ovary-like appearance. The female chicken embryos exposed to estrogen receptor α antagonist did show a decrease in cortex area of the left ovary. From the treatment with DPN and MPP there were no histological effects.

The gene expression in the chicken liver samples showed expression for the estrogen receptor- α plus the genes ZP1 and Apo VLDL II. Apo VLDL II is a good biomarker for environmental estrogen. Both estrogen receptor- α and - β are expressed in the chicken embryo liver but there was no difference in expression whether the embryos were exposed to estrogen-like compounds or not.