Public Abstract

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Title:EXAMINATION OF EXOGENOUS ESTROGENIC CHEMICAL EXPOSURE AND ALTERED FETAL NUTRITION IN THE CD-1 MOUSE FETUS

My dissertation examines two issues related to disruption of fetal growth: exposure to exogenous estrogenic chemicals and altered nutrition. My first set of studies was aimed at manipulating isoflavones in feed on serum estradiol levels in pregnant female CD-1 mice and their fetuses. Results were that fetal serum estradiol concentrations were elevated due to the absence of either isoflavones or soy protein in feed. Also, I show a difference in response to low doses of natural estrogens compared to manmade estrogens. I also show that isoflavones gave a nonmonotonic dose-response curve in that low levels of isoflavones elevated fetal estradiol levels and higher doses decreased fetal estradiol levels. The data show that the feed groups that had earlier onset of puberty in females were the same feed groups with higher estradiol during fetal life. These finding show that isoflavones have the potential to disrupt the fetal endocrine system. My last study involved examining placental transport in a crowded uterine horn. In the model used here, uterine crowding causes differential blood flow to fetuses. The fetuses with decreased blood flow relative to their siblings show decreased growth. I show here that the placenta does influence amino acid transport and that a reduced fetal growth is related to a reduced placental transport of nutrients. The importance of the crowded uterine model for the study of the effects of fetal nutrition on fetal growth is that this model incidence of IUGR in developed countries.