Public Abstract

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Title:TRANSGENERATIONAL EFFECTS OF *IN UTERO* HEAT STRESS ON REPRODUCTION IN PIGS

Seasonal infertility caused by high ambient temperatures and humidity during the summer months can have negative effects on the reproduction of female swine. These conditions may cause heat stress leading to large economic losses for swine producers. The objective of this project was to assess fetal and placental development and the development of gonads in conceptuses whose mother was either subjected to gestational heat stress (GHS; n=16) or gestational thermoneutral (GTN; n=14) conditions during pregnancy or in utero as a developing fetus. Gilts were housed in the Brody Environmental Chambers from weeks 4 to 8 of pregnancy before sacrifice during the 8th week of gestation for the collection of the reproductive tracts and fetal tissues, and a subset of gilts (GHS n=23; GTN n=25) were moved to the University of Missouri Swine Teaching Farm to farrow at approximately day 114 of gestation. No differences were observed between GHS and GTN females at the 8th week of gestation. Similarly, no differences were found between litters born to GHS or GTN females at the University of Missouri Swine Teaching Farm. Female progeny (generation 1; G1) from both GTN and GHS mothers remained on farm and were artificially inseminated at second estrus. During the 8th week of gestation, gilts that came from GTN (GTN-G1; n=55) and GHS (GHS-G1; n=50) dams were sacrificed for the collection of the reproductive tracts and fetal tissues. No significant effects of treatment were observed between GHS-G1 and GTN-G1 females, but a sex-specific transgenerational effect on fetal weight was observed. Male fetuses from GHS-G1 females had increased weight, while female fetuses were similar. The conclusion was that heat stress from weeks 4 to 8 of gestation in gilts did not change the growth of the fetus, placenta, ovary or testis at mid-gestation, and in utero heat stress from weeks 4 to 8 of gestation had gender-specific transgenerational (first generation) effects. These results will allow producers to better manage gilts during periods of high ambient temperatures.