## ASAS UNDERGRADUATE STUDENT POSTER COMPETITION

**0885 (T011) Effects of supplementing Holstein heifers with dietary melatonin during late gestation on serum antioxidant capacity and anti-Müllerian hormone of offspring.** B. O. Fleming*, K. E. Brockus, C. G. Hart, and C. O. Lemley, *Mississippi State University, Starkville.*

Previously, our laboratory observed an increase in maternal serum antioxidant capacity during late gestation dietary melatonin supplementation. Therefore, the objective was to examine the effects of supplementing melatonin to dams during late gestation on offspring serum antioxidant capacity and anti-Müllerian hormone concentrations. On d 190 of gestation, heifers ($n$ = 20) were blocked by BW and then randomly assigned to one of two dietary treatments: 1). 20 mg of dietary melatonin per day (MEL) or 2). no melatonin supplementation (CON). Dietary treatments were terminated on d 262 of gestation. MEL heifers received 2 mL of 10 mg/mL melatonin in ethanol while CON heifers received 2 mL of ethanol alone. At birth, calves were separated from their dams and given 3.8L of colostrum. Calves were fed 5.7L of whole milk daily and offered 0.9 kg/d of starter grain. Starter was increased by 0.9 kg/d when orts were 0 kg. Calf ($n$ = 18) total antioxidant capacity was determined in serum on wk 0, 1, 2, 3, and 4 of age. Concentrations of anti-Müllerian hormone were determined in female offspring ($n$ = 15) on wk 4 of age. Data were analyzed using the PROC MIXED of SAS. For repeated measures the model statement contained treatment, age, and their respective interaction. Total antioxidant capacity was not different ($P$ = 0.14) between calves from MEL treated dams vs. calves from CON treated. A main effect of age ($P$ < 0.001) was observed for total antioxidant capacity, which was increased at wk 1 of age vs. 0, 2, 3, and 4. Concentrations of anti-Müllerian hormone tended to be increased ($P$ < 0.10) in heifer calves from MEL treated dams (0.82 ± 0.19 ng/mL) vs. calves from CON treated dams (0.35 ± 0.19 ng/mL). In conclusion, the increase in maternal antioxidant capacity following dietary melatonin supplementation did not affect calf antioxidant capacity of serum during early postnatal development. Interestingly, the tendency for increased heifer calf anti-Müllerian hormone concentrations deserves further investigation into offspring ovarian reserves.

**Key Words:** anti-Müllerian hormone, antioxidant, melatonin

**0886 (T012) Effects of electrostatic particle ionization on hog barn air quality, emissions, and pig growth performance.** K. N. Card*[1], J. A. De Jong[1], J. M. DeRouchey[1], P. J. Tomlinson[1], M. J. Baumgartner[2], and Z. Liu[1], *[1]Kansas State University, Manhattan, [2]BEI Ag Solutions, Olivia, MN.*

Electrostatic particle ionization (EPI) systems emit negative ions, which in turn create polarized air particles. These polarized air particles attach to conductive or grounded surfaces in the barn. An experiment was conducted to determine the effects of EPI on hog barn air quality, emissions, and nursery pig growth performance. To make the comparison, the EPI system was installed in two identical nursery barns (200 pigs/barn) at the same location. During five 6-wk periods (6 to 23 kg BW) the EPI system was utilized in a single barn for one complete turn and then rotated to the opposite barn to ensure no barn effects would be present (five replications per treatment). Each barn was equipped with three external exhaust fans, and 12 internal attic air inlets. Pigs were allotted randomly between barns at the beginning of each period and measurements were taken every week for the 6-wk period. Dust particles were collected weekly inside the barn and in exhaust air for determination of particle size and average quantity for the turn. Additional measurements included in-barn air hydrogen sulfide and ammonia as well as ADG and final BW. Overall, there were fewer ($P$ < 0.02) in-barn 0.3, 2.5 and 10.0 µ dust particles when the EPI system was active. The EPI system also reduced ($P$ < 0.03) 0.3, 2.5 and 10.0 µ dust particles/m$^3$ in exhaust fan air. There were no differences for in-barn air ammonia and hydrogen sulfide concentrations. The EPI system tended to improve ($P$ = 0.09) ADG and final BW. In conclusion, EPI was able to reduce airborne dust concentrations in-barn and in exhaust air and tended to improve growth performance.

**Key Words:** electrostatic particle ionization, emissions, nursery pig

**Table 0886.**

| Treatment: | Control | EPI | SEM | Probability $P$ < |
|---|---|---|---|---|
| ADG, g | 414 | 442 | 12.5 | 0.09 |
| Final BW, kg | 22.60 | 23.27 | 2.25 | 0.06 |
| Inside dust, particles/min | | | | |
| 0.3 µ | 687,345 | 417,797 | 98,698 | 0.02 |
| 2.5 µ | 173,363 | 77,759 | 27,236 | 0.01 |
| 10.0 µ | 166,980 | 72,998 | 30,189 | 0.01 |
| Exhaust dust, particles/m$^3$ | | | | |
| 0.3 µ | 104.37 | 54.70 | 16.84 | 0.03 |
| 2.5 µ | 18.51 | 7.52 | 4.35 | 0.02 |
| 10.0 µ | 7.03 | 2.51 | 1.57 | 0.03 |
| Ammonia, ppm | 4.02 | 4.21 | 1.39 | 0.86 |
| H2S, ppm | 0.81 | 0.82 | 0.31 | 0.89 |