High levels of dried distillers grains with solubles (DDGS) in sow and nursery diets do not contribute to Mulberry Heart Disease (MHD)

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To evaluate whether including high dietary levels of DDGS compromises vitamin E (VE) and Se status and (or) the occurrence of MHD in swine, pregnant sows (n = 12, parity 2) were fed corn-soybean meal diets (C, 0% DDGS) or diets with DDGS (D, 40 and 20% in gestation and lactation) for 3 parities. In the 3rd parity, pigs were blocked by weaning BW within litter, penned, and allotted to 1 of 3 nursery diets (ND): 1) 0% DDGS, 2) 30% DDGS, and 3) 30% DDGS with 5x NRC (1998) level of VE, in a 3-phase program using a 2 x 3 factorial arrangement (n = 9 pens/treatment) of sow diet (S-D) and ND. Serum and milk were collected from sows and serum from pigs (n= 2 to 3/ litter) on d 0 (farrowing), d 7, and d 19 (weaning). Pigs (1 pig/pen, n = 54) were bled at d 47, and d 68 of age, and harvested at d 68 to obtain livers and hearts for histopathological evaluation for MHD. Milk, serum, and liver samples were analyzed for α-tocopherol (α-T) and Se concentrations. Pig performance (ADG, ADFI) and typical farrowing data (e.g. litter size and BW at birth and weaning) were recorded. Data were analyzed using SAS (Mixed procedure), with repeated measures when appropriate. Pre-weaning data were analyzed to test the effect of S-D. Nursery data were analyzed as a split plot (litter = whole plot, pen = sub-plot) testing effects of S-D, ND and S-D x ND interactions. No characteristic lesions of MHD were detected. Overall pig and sow performance was not affected by diet ($P > 0.05$). Liver α-T concentration was greater in pigs fed ND 3 than those fed ND 1 or 2 ($P < 0.01$). Pigs from sows fed D had lower ($P = 0.07$) serum α-T (3.69 vs. 4.42 ± 0.31 μg/mL) and Se ($P < 0.01$) during lactation than those from sows fed C. Pigs from sows fed D had lower ($P = 0.08$) serum α-T concentration in the nursery than those from sows fed C (2.66 vs. 3.11 ± 0.22 μg/mL). Milk α-T was not affected by S-D ($P > 0.05$), but sows fed D had lower ($P < 0.05$) milk and serum Se concentrations than those fed C. Feeding diets with DDGS to sows may impact the VE status of pigs, but in this study, feeding 30% DDGS nursery diets did not cause MHD.

Keywords: vitamin E, mulberry heart, DDGS, swine