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Bones quality indices in laying hens fed diets with a high level of DDGS and supplemented with selected feed additives

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An experiment with 192 caged ISA Brown laying hens, fed a diet containing a high level of corn distillers dried grains with solubles (DDGS), was conducted to determine the influence of selected feed additives on biomechanical and geometrical indices of tibia and femur bones. At 26 weeks of age hens were randomly assigned to 8 treatments with 12 replicates (cages of two hens). To week 55, hens were fed isocaloric and isonitrogenous experimental diets either containing or not containing a high level of DDGS (200 g/kg). The diet containing 200 g/kg of DDGS was supplemented or not supplemented with feed additives, i.e. enzymes (xylanase and phytase), sodium butyrate, probiotic bacteria (L. salivarius), herbal extract mixtures (Taraxaci siccum, Urticae siccum, and Salviae siccum), inulin or chitosan. At week 55, inclusion of DDGS in the diet had no effect on biomechemical (bone breaking strength, yielding load, and stiffness) or geometrical (cortex thickness, cross-section area, weight, and length) indices of tibia and femur bones (P > 0.05). Some of the supplements used had a beneficial effect on bone quality in hens fed the diet with a high level of DDGS. Thus, the addition of probiotic bacteria or herb extracts increased the breaking strength of femurs and breaking strength and yielding load of tibias (P < 0.05). The results of this study indicate that DDGS may be included to a level of 20% in the diet of laying hens without any negative influence on bone quality, while such feed additives as probiotic bacteria and herbal extracts may improve the selected biomechanical indices of bone quality of layers fed diets with a high level of DDGS.

Keywords:

layers; distillers dried gains with solubles; feed supplements; femur and tibia measurements

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