

Probiotics have been used as an alternative to antibiotics in poultry production due to their benefits in enhancing production as well as preventing gastrointestinal inflammation and infections. The objective of this study was to determine the effect of dietary supplementation of probiotics on performance and skeletal health of laying hens.

Six replicates (cages) with 4 White Leghorn hens each were assigned to 1 of 4 treatments at 60 wk of age based on BW. The hens were fed either a basal diet (Control, 2890 kcal/kg ME and 18.3% CP) or one of three treatment diets comprising the basal diet with 3 levels of a commercial probiotic product (0.5X, 100,000 cfu/g of feed; 1.0X, 200,000 cfu/g of feed; 2.0X, with 400,000 cfu/g of feed) for a 7-wk period. Each cage provided 484 cm² floor space and 10.3 cm feeder space per hen. Egg production was recorded daily, while egg weight, eggshell quality (weight, breaking force, and thickness), and feed intake were measured every other week. Body weight was recorded at 60, 63, and 66 wk of age. Skeletal health indicators (bone mineral content, bone mineral density, bone area, and bone length) and cecal microflora composition (*Bifidobacterium spp.*, *Lactobacillus spp.*, and Coliforms counts) were determined at 66 wk of age.

The percent of damaged eggs (broken and shell-less egg) was significantly decreased in 0.5X and 2.0X groups compared with that of control group ($P = 0.02$). A significant increase in femoral bone mineral density and bone mineral content occurred in the 2.0X groups ($P = 0.02$ and 0.01 , respectively), with a concomitant increase in bone mineral density of tibia and humerus ($P = 0.09$ and 0.06 , respectively). A tendency of increase in bone mineral content of femur was also found in 0.5X and 1.0X groups ($P = 0.06$ and 0.08 , respectively). Cecal *Bifidobacterium spp.* counts were significantly increased in all probiotic treated groups ($P < 0.001$). These results indicate that dietary probiotics supplementation had a significant effect on laying hens' eggshell quality, skeletal health, and cecal microflora composition, and thus may improve laying hens' welfare.

Thanks to the Center for Animal Welfare Science for supporting me to attend the Poultry Science Annual Meeting. I received invaluable feedback from the audience, which is beneficial for improving my academic skills. And it opens my scientific mind by communicating with other scientists.

Yan F. F., G. R. Murugesan, and H. W. Cheng. The effects of dietary supplementation of probiotics on performance, eggshell quality, cecal microflora composition, and skeletal health of White Leghorn hens. *Poultry Science*. 94 (E-suppl. 1): 46