

News & Comments

Effects of Antioxidants on Broiler Breeder Egg Production, Fertility and Hatchability

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In the literature, it has been discussed how oxidative damage impairs male poultry fertility. It has been demonstrated that the seminal plasma of mammals has an antioxidant system made up of several enzymes and free radical scavengers like vitamins C and E, hypotaurine, taurine, and albumin. Vitamins C and E have also been demonstrated to shield semen from oxidative damage. In addition, it has been suggested that organic selenium from the yeast with a high selenium content, as opposed to inorganic selenium, may enhance fertility because selenium from yeast is absorbed more effectively by tissues. These studies aimed to assess the relationship between selenium supply alone and apparent sexual maturity as shown by comb development (height).

At the same ages that the shank length was measured, the comb height was measured from the top of the head to the highest point of the comb. From the nests, eggs were twice daily removed and kept at 18-20 EC and % RH till incubation. The data on hatchability and fertility were examined either weekly or biweekly. Additionally, a cumulative and age-based quartile time analysis of these data was performed. Four replicate pens per interaction cell and 16 pens total were used to randomly distribute the treatments. A fully randomized design with two treatments and six replicates for each treatment was employed for Experiment 2.

From 21-32 weeks of age, the BW of the LC group was noticeably heavier, but after that, the disparities diminished. Neither the interaction with comb height nor the selenium source had a statistically significant impact. Based on data from 21-36 weeks of age, there was a 63% association between BW and comb height. While there was no discernible difference in shank length, the SC and HiSe Yeast combo group had the lowest value from 21-36 weeks of age. HiSe Yeast enhanced overall embryo mortality in the SC group, according to significant interactions in the third quartile time.

For male broiler breeders to properly elicit female sexual receptivity and copulate, they must be physically and behaviorally mature. The comb area has been a credible indication of male fertility in some strains, even though only 16% of the variability in fertility was attributed to it. In the current study, the comb height served as a proxy for the comb area. Comb height and comb area are substantially associated, and the measurement method used in Experiment 1 has proven to be useful in both commercial and experimental settings.

The current studies compared feed distribution and its effects on broiler breeder fertility to selenium



sources and antioxidant vitamins. Antioxidant vitamins (Vitamins C and E) and HiSe yeast may have had an energy-saving effect since they helped reproductive issues brought on by insufficient feed allocations, but when feed allocations grew, the antioxidant advantage tended to diminish.

The findings of the current studies allowed us to conclude that HiSe yeast and increased levels of the antioxidant vitamins C and E somewhat reduced reproductive issues brought on by insufficient feed allocations. Furthermore, it was shown that feed allocation interacted with enhanced antioxidant levels, suggesting that for broiler breeders to maintain fertility, it may be required to maintain optimal feed allocation and antioxidant levels.

JOURNAL REFERENCE

H. Romero-Sanchez, D. Joardar, G.K. Walker and J. Brake, 2020. Effects of antioxidants (selenium, vitamin c and vitamin E) and feed allocation on broiler breeder egg production, fertility and hatchability. *Int. J. Poult. Sci.*, 19: 557-567.

KEYWORDS

Broiler breeder, fertility, selenium, Vitamin C, Vitamin E

