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Growth, Serum Biochemical Indices, Antioxidant Status and Meat Quality of Broiler Chickens Fed Diet Supplemented with Sodium Stearoyl-2 Lactylate

Siyal Farman Ali¹, Wang Chao¹, Wan Xiaoli¹, He Jintian¹, Wang Mingfa², Mohamed Ezzat Abd El-Hack³, Zhang Lili¹, Zhong Xiang¹ and Wang Tian^{1*}

¹College of Animal Science & Technology, Nanjing Agricultural University, Nanjing Jiangsu, China, 210095; ²Henan Academy of Agricultural Sciences, Institute for Animal Husbandry and Veterinary Research Zhengzhou, Henan, China;

³Department of Poultry, Faculty of Agriculture, Zagazig University, Zagazig, 44511, Egypt

*Corresponding author: tianwangnjau@163.com

Abstract

This experiment was performed to examine the impact of sodium stearoyl-2-lactylate (SSL) on growth, antioxidants enzymes and meat quality of broilers fed low energy diets. A total of 240 Arbor Acre broilers were randomly distributed into four groups in complete randomized experimental design. The experimental groups were as: 1) PC: control was fed with the diet without adding any emulsifier, 2) P1: Low energy diet (LED) + 0.025% SSL, 3) P2: LED + 0.05% SSL and 4) P3: LED + 0.1% SSL, respectively. Findings in our study demonstrated that chicks fed with P2 diet had greater ($P < 0.05$) average daily feed intake (ADFI), daily weight gain (ADG) and feed conversion ratio (FCR) compared to PC during 0-21 days. Moreover, during 21-42 days and overall experiment, the ADG and ADFI were statistically higher ($P < 0.05$) in P3 as compared to other groups. The better FCR during whole experimental period was observed in P3 comparing to control and other treatments. Weights of pancreas and thymus were significantly ($P < 0.05$) improved in P2 and P3, while spleen weight was higher ($P \leq 0.05$) in P3 followed by P2 then P1 compared to PC. The birds treated with P3 showed the lowest ($P \leq 0.05$) value of serum total cholesterol at 42 days of age. Values of breast muscle color were statistically ($P \leq 0.05$) differed due to treatments. The group of P3 showed significantly decreased lightness (L^*) and increased redness of breast muscle compared to other groups. In addition, serum concentration of malondialdehyde (MDA) depressed ($P \leq 0.05$) and GSH-Px activity increased ($P \leq 0.05$) in P3 comparing with other groups. It can be concluded that dietary supplementation of SSL (0.025-0.1%) in low energy diets exhibited similar or more effective effects on growth performance than the high metabolizable energy diet. However, the use of 0.1% SSL can be effective to improve the growth performance, meat quality and antioxidant status of broiler.

Key words: Antioxidants, Broiler, Growth, Meat quality, Serum lipids, Sodium stearoyl-2 lactylate



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