Effects of Cysteamine on Growth Performance, Digestive Enzyme Activities, and Metabolic Hormones in Broilers

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Abstract: A total of 600 avian male broilers at the age of 1 d were used to investigate the effects of cysteamine (CSH) on growth performance, digestive enzyme activities, and concentrations of serum hormones. The broilers received the same basal diets, with CSH added at 0 (control), 60, 90, 120, or 150 mg/kg. The feeding program consisted of a starter diet until 21 d and a grower diet until 42 d. The broilers with addition of CSH at 60 or 90 mg/kg had significantly higher growth rates during d 1 to 21 or d 21 to 42 compared with the control, respectively. However, adding 150 mg of CSH/kg significantly suppressed the growth of broilers. Adding 60 mg of CSH/kg significantly increased the activities of protease, amylase, and lipase in the pancreas and small intestinal contents during d 1 to 21, and the activities of protease and amylase in the small intestinal contents during d 21 to 42. Adding 90 mg of CSH/kg significantly increased the activities of lipase during d 1 to 21 and protease, amylase, and lipase during d 21 to 42 in small intestines. The activities of digestive enzymes during the whole period were suppressed by adding 150 mg of CSH/kg. The concentration of serum thyroxine was higher in the CSH-added birds during the whole period, whereas serum triiodothyronine was higher only during d 1 to 21 compared with the control. These findings indicate that low doses of dietary CSH may improve the growth performance and the activities of the digestive enzyme, but high doses of CSH appear to be detrimental to growth and digestion.

Key words: cysteamine, growth performance, digestive enzyme, metabolic hormone, broiler