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The thesis submitted for the degree of Ph.D in the field of
Livestock nutrition

Study of glycine, glutamic acid and N-acetylcysteine detoxification through antioxidant system regulation of broiler chicks under aflatoxicosis

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Abstract:

Food contamination with aflatoxin B1 is a major problem in most parts of the world, especially in developing countries and today various methods have been provided to prevent or reduce the adverse effects of food contamination. This research aims to investigate the effects of the amino acids gallicine, glutamic acid and N-acetylcysteine on the Antioxidant system of broiler under aflatoxicosis. For this purpose, 680 broiler chickens of Ros308 in 17 experimental groups fed with 5 different levels of amino acids glycine, glutamic acid, N-acetylcysteine and Aflatoxin was used with 4 repetitions and each repetition included 10 pieces of chicken. Performance characteristics (feed intake, weight gain, Feed conversion factor) were weekly measured and characteristics of weight of breast, heart, liver, intestine, bile, thigh, stone, front stomach, live body weight, body weight (without intestines and viscera) and carcass weight were checked at the end of the research period. The results of the central composite design had the highest consistent of R2 with the quadratic regression model in most of the studied attributes of the broilers. Regarding performance traits, the negative effects of aflatoxin on feed intake and increment of body weight was significant, which increased the food conversion rate. Also, the results showed that applying of amino acids to the diet moderated the negative effects of aflatoxin B1, and the feeding of three amino acids, gallicine,

Glutamic acid and N-acetylcysteine as the main precursors of glutathione by providing the right conditions cause improvement of the antioxidant system and finally the health of the animal. In the meantime, using response level methodology with providing appropriate statistical and graphical information made it possible to identify the superior model and determine the optimal food ration and doing this study method is recommended to save time and study costs in other researches.