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Effect of Different Levels of Vitamin AD3E on Performance, Response of Humoral Immune and Percentage of Tibia Ash Broilers

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ABSTRACT

Background: This experiment studied the effect various levels of vitamin AD3E on performance, response of humoral immune and percentage of tibia ash broilers. A total of 300 one-dose old rose 300 male mate broiler chicks to evaluate five different levels of vitamin AD3E (0, 0.6, 1, 1.2, 1.4 Cc) per liter. Broilers were injected at the age of 10 and 17 days by dose 0.2 Cc of solution 0.5 per cent from sheep red blood cells as antigen in order to study response of humoral immune. Then, blood sampling was performed, 7days after each injection. Following, we measured Titr Antibody against (SRBC) by hemagglutination. The results indicated that there is no significant relationship between Weight of lymphoid organs (spleen and bursa fabricius), feed consumption, and weight body, feed conversion ratio, and amount of vitamin AD3E. Additionally, results indicated that vitamin consumption of AD3E led to increase percentage of tibia ash broilers and response of humoral immune.

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INTRODUCTION

A few vitamins are necessary for metabolism. These materials are produced in nature by microorganisms and plants, and some evolved organisms produce some of them. Vitamins are produced by microbial and chemical process industry and organic molecules have various chemical structure and diverse physiological roles of common and different mode of action. In according to restriction funding, therefore, Careful attention to the necessity use of this product is very important in the poultry industry. Thus, reduce potential costs has a major effect on profitability of producers. While, it seems that current consumption of these vitamins in whole periods of breeding is excessive.

In the poultry industry due to selection for faster growth to some sensitive and may reduce the immune response and this problem leads to Immunosuppressive diseases such as IBD and failure to obtain the appropriate antibody at the time of vaccination. In according to available complement in market and it is mandatory and equal amount vitamin 2.5+2.5 per ton of feed. Based on instruction of NRC [16] broiler diets require several times less than the amount of our feeding. If the poultry feed, concentrates containing 2.5% or 0.5, these concentrates also contain supplements and vitamins, including vitamins A, D, E. In addition, most of poultry diets include vitamins mixed in water and these recommendation are considered without real necessity of boiler. Meanwhile, vitamins are available in diets of chicken.

All of vitamins are brought together in a bottle, which called AD3EK3C, AD3EAD3EK3, AD3EC, Aspirin + C and several other vitamins. AD3E is the most expensive and common in among all of them.

Thus, in current study we try to use complementary vitamins and investigate that using these vitamins can lead to increase performance of broiler and improve growth and conversion coefficient or vice versa is true. In other word, we incur huge cost and it does not effective on performance of chicken and or even become worse and leads to increase of initial losses and problems of secondary growth.

In according to Fat-soluble vitamins (A, D3, E, K) has ability of saving in liver, therefore, it is possible that amount of reserve in initial period can be adequate for final period. Furthermore, it may provide part of the needed vitamins from food items of birds fed in the diets. Finally, aim of this research is investigating effect of different level of vitamins AD3E on performance of growth and humoral immune system and percentage of tibia ash broilers.

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MATERIALS AND METHODS

Present research was done during 44 days in hall of 12,000 pieces Darius Naeimi in 12 kilometers of Torbat-Heydarieh. This experiment was carried out in Hall on a piece of 2000 chicks in Torbat-Heydarieh in 300 one-day old Ross 308 male broiler chicken.

Bone samples (4 bone for each treatment) is tested and bones 30 hours after Isolated from meat and soft tissues in the oven at 104°C for 24 hours to dry, then in order to the treatment of fat 4 bone separately immersed in ethyl ether analgesia for 24 hours. Following, they were dried again in the oven and immediately transferred to desiccators after awhile, Individual bones weighed and were burned about 7 hours in a furnace at temperature of 550°C. Finally, burning ash samples were transferred to desiccators and determining amount of tibia ash broilers

Feed consumption:

By subtracting, the remaining food grains allocated to per ton throughout following equitation:

$$\text{feed consumption of each chicken in each step} = \frac{\text{Feed consumption in each step}}{\text{Number of chickens}}$$

Body weight:

The overall weight of each chick per day and it is determined by dividing the total weight and the number of chicks.

Weight gain:

Subtracting weight per day than the weight gain

Conversion coefficient ratio:

Conversion coefficient is calculated as the amount of food consumed per day on weight gain.

$$\frac{\text{Daily feed consumption}}{\text{Daily gain}}$$

Total SRBC:

The sheep red blood cells, which were injected to each chick, based on formula concentration 5% and 2% per chick.

Determining tibia ash broilers:

Bone samples (4 bone for each treatment) is tested and bones 30 hours after Isolated from meat and soft tissues in the oven at 104°C for 24 hours to dry, then in order to the treatment of fat 4 bone separately immersed in ethyl ether analgesia for 24 hours. Following, they were dried again in the oven and immediately transferred to a desiccators after awhile, Individual bones weighed and were burned about 7 hours in a furnace at temperature of 550°C. Finally, burning ash samples were transferred to desiccators and determining amount of tibia ash broilers.

Antigen Sheep Red Blood Cell (SRBC):

To evaluate the humoral immune response of broilers against sheep red blood cells (SRBC) were used as antigen. Immunoglobulin M is sensitive 2-mercaptoethanol in the presence of 2-mercaptoethanol.

Results:

There is not a significant relationship between different ages of chicks fed and different experimental treatments. Therefore, there is statistical conflict between (11 and 24 days), (25 and 42 days and total period of 0-42 days), however, by reducing vitamin AD3E in water lead to increase growth.

Table 1: Effect of different level of vitamin Ad3E on relative weight of broiler.

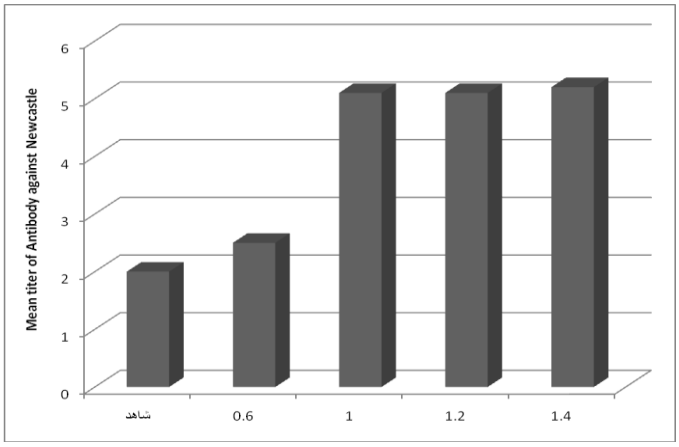
21 days	Treatment
0.00102	Control (0%)
0.00103	0.6
0.00103	1
0.00104	1.2
0.00103	1.4
0.215 0.12	Sig Standard error

Table 2: Various levels of vitamin AD3E on percentage of tibia ash broilers.

Percentage of tibia ash broilers	Treatment
71.6[b]	0
73.3[b]	0.6 Cc vitamin AD3E
76.9[a]	1 Cc vitamin AD3E
77.1[a]	1.2 Cc vitamin AD3E
80.2[a]	1.4 Cc vitamin AD3E
5.36	Sig
0.164	Standard error

Table 3: The mean antibody titer against Newcastle in various level of vitamin AD3E.

Anti-body against Newcastle	Level of vitamin AD3E
2[a]	0
2.5[a]	0.6
5.1[b]	1
5.1[b]	1.2
5.2[b]	1.4
0.055	Sig
0.89	Mean level of Error



Discussion:

Average weight of chicks in period of breeding reduces by increasing level of vitamin AD3E water from zero to 0.6 and 1-1.2 and1.4 Cc per liter. However, there is no significant difference between variables. Results of the research is consistent with research of while, Results of the research is inconsistent with. Furthermore, average feed consumption in total period of breeding by increasing AD3E in water 0-1.4 Cc per liter does not have significant effect on consumption of chicks. Whereas, there is reverse relationship between decreasing feed consumption and increasing level of vitamin AD3E. The results were consistent with research of and this issue maybe due to non-overeating birds in the nutrient balance period.

In the end of twenty-firth day by increasing level of vitamin AD3E from 0-1.4 Cc, there is no significant difference between treatments. The result is consistent with Fritis *et al*, and is not consistent with result of research's Garlich *et al*.

In according adding three vitamins of A, D3, E, and interactive effects of these vitamins on the experiments conducted by Britlon and Aburtio and increasing high amount of vitamin A, E and low amount of D3 in diet is effective on metabolism of bone and performance of broilers.

Results indicate that vitamin E leads to increase activity of Lymphocytes and consequently increase the body's resistance to pathogens. Moreover, there is no significant effect of increasing amount of vitamin AD3E from 0-1.4 in during period of consumption on weight of lymphoid organs such as spleen and bursa fabricius. Although, by increasing amount of vitamin AD3E in during period of illness specifically effective on immune (Gumboro) has significant effect and causes enlargement of the bursa fabricius. The results are consistent with research of Freeman *et al*; Khajalii *et al*; Majorka *et al*, however, it is not true for research of Patel *et al*.

Conclusion:

Based on results of the research, there was not significant relationship between amount of vitamin AD3E and performance, lymphoid organ weight and mortality. On the contrary, amount of vitamin AD3E does not increase Humoral immunity and tibia ash. In according to direct role of vitamin E on increase of immune system and it is confirmed. Therefore, it can be concluded that probably role of vitamin ADE3 in increasing immune of birds is thank to vitamin E.

In according to results of the research, vitamin ADE3 is one of the most expensive and highest consumption. Based on existence of this vitamin in yolk sac; it is recommended that do not use it in the first week of breeding, although, there is a chance of increasing initial mortality due to absorption of yolk and sticky anal.

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