Biological Forum – An International Journal ***(Special Issue 2015)*** **7**(2): 27-30(2015)

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Effect of substitution of ethanol extract of alfalfa (*Medicago sativa*) instead of Antibiotic use in poultry and its impact on liver function enzymes and weight gain in broiler chickens Rass

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(Received 20 May, 2015, Accepted 23 July, 2015)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: In recent years, due to ban or restriction of the use of antibiotics as feed additives in animal feed, Use of additives such as probiotic and Phytobiotics as replacement combinations of antibiotics, special attention to the animal husbandry industry and poultry industry has been. Results of some studies carried out in Iran demonstrate the use of these additives in poultry nutrition order to increase the efficiency of their production. A total of 60 male Ross broiler chicks were randomly divided into three treatment. Treatments including : control, alfalfa 0.1%, alfalfa 0.15%. The None type of antibiotic that is used in the project and at the end of the period of function indicators of liver enzymes (AST, ALT, ALP) was determined and the Body weight was measured. Treatments for liver function marker enzymes have been shown to increase. But ALP enzyme at P<0/01was significant andthe other two enzymes AST, ALT did not showed a significant increase. In terms of weight gain in all groups compared with control group, a significant increase showed in the level of P<0/001.The alcoholic extract of alfalfa replacing in the dose listed can without the use of antibiotics, to gain weight, without any metabolic particular problem found during the rearing broiler chickens.

Keywords: The Alcoholic Extract of alfalfa, antibiotics, liver enzymes, weight, broiler chickens.

INTRODUCTION

Results of some studies in the world even in Iran, Represents the possible use of the additives such as extracts of medicinal plants in poultry feed in order to increase the efficiency of produce them. In most countries, including Iran, there is shortage of animal protein, and it is significant damage to the health of human society brings. Shortage of protein in the diet can reduce the body's resistance to disease in human and can be workforce reduction, reduce power mental and physical wellbeing and increase the mortality rates. Animal protein from milk, eggs, red and white meat (chicken, fish, and shrimp) provided. Poultry, most efficient way to convert agricultural byproducts and waste into meat and eggs for human consumption Therefore, growing of poultry and increase the products is one of the most important and the most practical way the providing of animal protein in our country. The growing of poultry Industrial is developed, So that it is able to consume more food with less cost to provide population of our country. In Iran ready to cook poultry to produce 2 million ton in years, the seventh of the world's poultry producers (Al-Kassie, 2009).

MATERIALS AND METHODS

The scientific name of this method, extraction the method of the solvent couch and solvent use is industrial methanol 90%. Alfalfa plant at standard conditions, under the shadow dried and then, extraction was performed. The extract, by dissolving in water the chickens were given. In order to solve the extract, the extract was solved in equal volumes of medical alcohol and then was dissolved in drinking water the chickens.

A. The plant scientific name

English name of this plant is Alfalfa and/or Lucerne, and its scientific name is *Medicago sativa.*

B. Assessment liver Function

The liver, at two levels substances which originate from the portal circulation removes and metabolizes. The first level of the physical and Kupffer cells and Phagocytosis of bacteria leads are done. The second level of defensive is biochemical. In liver cells, there are vast enzymes, which exogenous and endogenous toxins are modified its and metabolites. These reactions are divided into two major groups: Phase I reactions include: oxidation, hydroxylation and other catalyze reactions by Cytochrome p-450, and Reactions of Phase II, which will be followed by subsequent reaction phase I, That the products obtained with the other molecules, Such as: Glucorunic acid, sulfate, amino acids, or glutathione are conjugate Until increase repel them (Maass, 2005).

One of the most important tests to evaluate the liver function is liver enzymes (AST, ALT, ALP), When hepatocytes died by necrotic response to inflammation or infection, they released enzymes such as the alanine aminotransferase (ALT) and aspartate aminotransferase (AST). These enzymes are readily measurable in serum, When increased, shows the liver damage (Nobakht, 2010) In adult birds, alkaline phosphatase (ALP) mainly stemmed from The liver. When the, the chickens are growing, the most important its source bone cells (Giannenas, 2010).

RESULTS

Data from experiments using a linear model ANOVA in SPSS 16 was analyzed. Mean comparison was performed by Dennett tests (Table 1). Average and standard deviation of the dependent variable in the three groups studied (liver enzymes).

Table 1: Average and SD grope in the liver enzymes.

Variable	Alfalfa 2		Alfalfa 1		Control	
	SD	Average	SD	Average	SD	Average
AST	35/2	265/2	33/3	258/8	38/83	244/4
ALT	9/24	26/4	11/69	26/3	3/6	24/4
ALP	338/12	4064	740/95	3874	516/21	3104/5

Table 2: Effect of alfalfa alcoholic extract on liver enzymes (AST, ALT, ALP).

Variable	Source	(MS)	(ss)	(df)	F
AST	Between group	1134/93	2269/87	2	0/425
	Within group	1285/39	34705/6	27	
ALT	Between group	12/7	25/40	2	0/16
	Within group	78/33	2114/9	27	
ALP	Between group	258145/38	5162901	2	**8/33
	Within group	309935/28	8368252	27	

P<0/001***, p<0/01**, p<0/05*

The table above compares indicates the incidental result of the analysis of variance table 2. Both the paired comparison between experimental groups and control groups in terms of liver enzyme ALP the level less than 0/05 is significantly.

Also the difference between the experimental group and the control group in both the paired comparisons is positive which indicates the degree of liver enzyme ALP in each treatment groups in comparison with control group has increased.

Table 3: Test Paired comparison test between the experimental and control groups in terms of Liver enzyme ALP.

Dependent variable	Standard error	Average differences I-J	Comparative groups J	I	Significant
ALP	248/9	769/5	Alfalfa1	control	0/009
	248/9	959/5	Alfalfa2	control	0/001

P<0/001***, p<0/01**, p<0/05*

Table 4: The mean value and standard deviation in studied groups of the dependent variable (weight) control Alfalfa1 Alfalfa2.

Variable	Alfalfa2		Alfalfa1		control	
	SD	Average	SD	Average	SD	Average
Weight	152/97	2635	116/06	2276	60/88	2001

P<0/001***, p<0/01**, p<0/05*

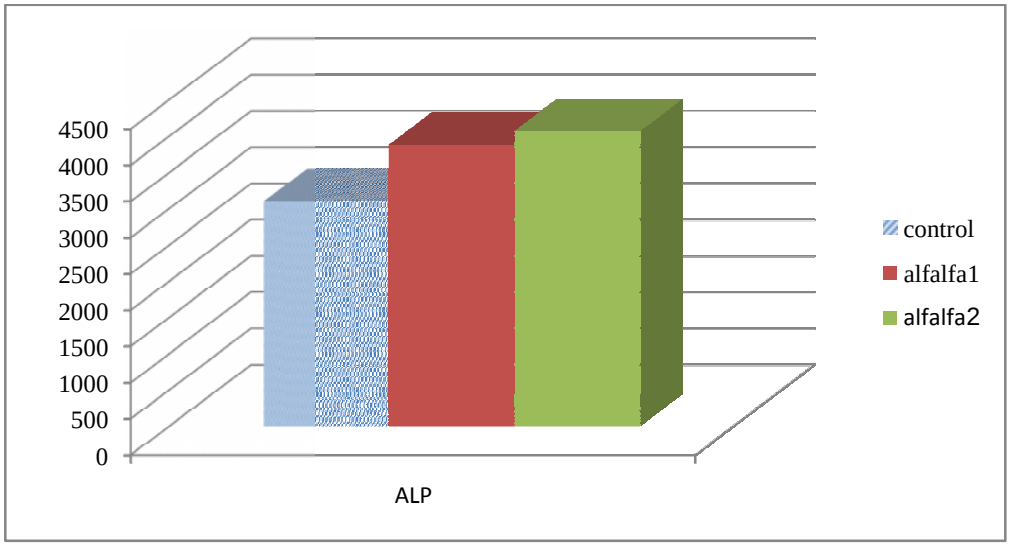

Fig. 1. Mean comparison liver enzyme ALP in three groups.

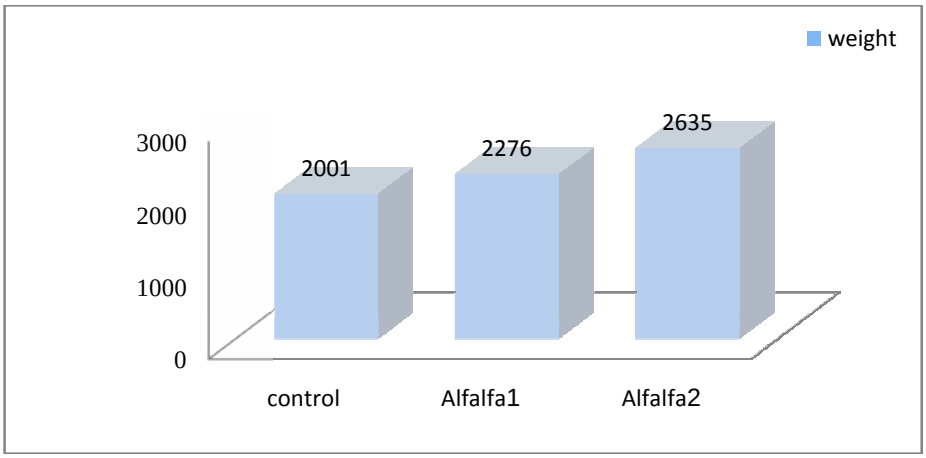

Fig. 2. The average at groups in terms of weight.

Table 5: Complete table analyzes the impact of different proportions of variance on the dependent variable weight.

Variable	Source	(MS)	(ss)	(df)	F
WEIGHT	Between group	901663	3606652	4	***43/87
	Within group	20553/78	924920	45	

P<0/001***, p<0/01**, p<0/05*

The average of the three groups in terms of weight, a significant increase in alpha level less than 0/001 indicates the control group compared to controls.

CONCLUSIONS

In this study, the alcoholic extract of alfalfa increases the ALP enzyme, Which in the broilers because they are growing and not adult; this increase may be due to increased bone growth and bone cells in broiler chickens and given that the enzyme is specific for liver function is enzymes AST, ALT.

In this study it was found that these enzymes have not had significantly increased and not only the not have negative impact on body weight; But also cause weight gain, in conditions without the use of antibiotics has been. According to the above findings; this is concluded: the alcoholic extract of alfalfa improves the poultry performance in terms of weight gain; without the acute liver toxicity and is a Perfect Alternative Instead of antibiotics in the poultry industry.

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