

The Effect of *Saccharomyces cerevisiae* on Blood Parameters of Broiler Chicken's

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Abstract: Probiotic is a Greek word, which means "for life". Probiotics are microbic food supplements, which have beneficial effects on the host by bowel microbic balance optimizing. An experiment in a completely randomized design with 5 treatments (0, 0.5, 0.1, 0.15 and 0.2 percent), 4 replicates and each replicate included 20 male chicks of strain, "Ross 308" was used. The experimental diets fed at three different breeding periods (starter, grower and finisher) and using tables to nutrient requirement of poultry (NRC1994) were arranged and prepared. At the age of 49 day, one bird from each replicate was selected and the blood sample was taken from the wing artery and then the blood factors (R.B.C, W.B.C, M.C.H, M.C.V, M.C.H.C, H.C.T, H.G.B) were measured. data will be analyzed and variance by SAS software and average data will be compared by multi tolerance test of Donken in probability level of 5 percent. The results showed that yeast *Saccharomyces cerevisiae* have significant effect on blood factors all traits ($p < 0.05$) and level 0.2 percent yeast in comparison with other more appropriate levels and the increase in factors can have an important role in the health and safety of flying and ultimately lead to increased economic profit margins are.

Key words: Blood Parameters • Broiler • Chicken • Ross • *Saccharomyces cerevisiae* • Yeast

INTRODUCTION

Probiotic is a Greek word, which means "for life". Probiotics are microbic food supplements, which have beneficial effects on the host by bowel microbic balance optimizing [1]. In recent years, using probiotics in flocks' nutrition impressed scientists due to its good effects on growth, food conversion coefficient and flocks health [2]. Also in flocks industry probiotic supplements made weight increasing optimizing, feed conversion ratio, fatalities decrease [3], triglyceride and cholesterol in meat chickens [4]. It seems that the living yeast plays a middle factor role in lactic acid bacteria growing and competes with pathogen bacteria make them destroyed and gone from bowel floor system [5]. Yeasts are, also considered as vitamin, protein and enzyme sources including unknown growing factors [6,7]. Yeasts also activate animal immune system [8]. *Saccharomyces cerevisiae*, which is called baking yeast too, has biological value and is full of B-complex vitamin [9].

Agawane and Lonkar [10] reported that *saccharomyces cerevisiae boulardii* probiotic decrease in chickens blood cells content and hemoglobin. Shareef

and Al-dabbagh [11] showed No differences were recorded in the percentages and absolute numbers of different WBCs in all treatment groups. Paryad and Mahmoudi [12] Result showed that dietary *saccharomyces cerevisiae* could improve the blood constituents of broiler chicks. Rahimi and Khaksefidi [13] supplementation of diet with 0.1% probiotic significantly increased WBC count and decreased H/L. Al-Kassie *et al.* [14] reported that no significant differences in WBC. Thongsong *et al.* [15] result showed antibiotic-probiotic combination groups significant increases in the mean red blood cell count, the mean hemoglobin concentration.

Golian *et al.* [16] reported that increased Lymphocyte and decreased Heterophile and Monocyte proportion of WBC. Djouvinov *et al.* [17] showed the probiotic supplementation did not affect the hemoglobin and cholesterol concentrations. Abdollahi *et al.* [18] and Balachandar *et al.* [19] reported that probiotic didn't have meaningful effect on hemoglobin. Zareshahne *et al.* [20] reported that the probiotic blood hemoglobin content was not affected by experimental diets and white blood cells were significantly affected by dietary treatments.

Today, it is clear that using yeast in animal's diet have useful effect. Therefore, in recent years, researchers have more attention in controlling malady by probiotics to improve increasing weight, feed conversion ratio, decreasing mortality in broiler chicken, protecting chickens against pathogenic factors by creating colony in digestion system, improving performance, adaption of antibacterial with probiotic, avoiding creation of strength lineage of bacteria. The present investigation was carried out to the effect of utilization of different and determine best levels of *saccharomysec cerevisiae* on broiler chicken's.

MATERIALS AND METHODS

An experiment in a completely randomized design with 5 treatments (0, 0.5, 0.1, 0.15 and 0.2 percent), 4 replicates and each replicate included 20 male chicks of strain, "Ross 308" was used in 49 days.

Adjustment and supplying food diets is perform by UFFDA programming and is balances in nutrients materials. Food portion in test were in 3 different periods of growing which are starting period (0-21 days), growing period (21-35 days), finisher period (35-49 days) and are supplied by table of birds fed need [21] and applied for chickens. *Saccharomysec cerevisiae* applies in lineage SC⁴⁷ and is made by France Co of Lesafer and its commercial name is Biosaf. This yeast is as small granules with cream color and with amount of 8×10⁹ CFU/g).

In 49 days aged and after experiment last weighing, from each experiment unit randomly a chicken was used and 1.5 cc blood sample from wing artery was taken and put in experiment pipe including anti-ligation material (EDTA). Then, samples were put in pots filled with ices (without touching) and were taken to the laboratory to measure their white blood cells and red blood cells based on cell counting method by CBC COUNTER machine and other factors (R.B.C, W.B.C, M.C.H, M.C.V, M.C.H.C, H.C.T, H.G.B). Finally, data will be analyzed and variance by SAS software [22] and average data will be compared by multi tolerance Donken test [23] in probability level of 5 personages. The statistical model is as follows:

$$Y_{ij} = \mu + T_i + e_{ij}$$

Y_{ij} : Observation of the treatments

μ : Average community

T_i : Effect of treatment

e_{ij} : Experimental error that is caused by unknown factors.

Table 1: Composition of basal diet in different periods of the experiment

Ingredient %	Starter (0-21d)	Grower (21-35d)	Finisher (35-49d)
Corn	55.2	57.2	59.5
Soybean meal	39	36.2	35
Vegetable oil	0	0.8	1.6
DCP	1.9	1.9	1.9
Oyster	0.9	0.9	1.05
DL-methionine	0.2	0.175	0.16
L-lysine	0.1	0.11	0.08
Vitamin -			
Mineral premix*	0.5	0.485	0.48
Salt	0.2	0.23	0.23
Anzymite	2	2	0
Total	100	100	100

* The broiler premix provided the following per kg of complete diet: 1400 IU Vitamin A, 3000 IU Vitamin D₃, 50 mg Vitamin E, 4 mg Vitamin K, 3 mg Vitamin B₆, 3 mg Vitamin B₁₂, 60 mg niacin, 20 mg pantothenic acid, 0.2 mg folic acid, 150 mg choline, 48 mg CA, 3.18 mg P, 100 mg Mn, 50 mg Fe, 80 mg Zn, 10 mg Cu, 0.25 mg Co, 1.5 mg Iodine

Table 2: Analysis of nutrient material in testing portion of different period of growing Nutrient

Nutrient Material	Starter	Grower	Finisher
ME, kcal/kg	2900	2950	3050
Crude protein, %	21	20.5	19
Calcium, %	0.94	0.87	0.78
P available, %	0.42	0.38	0.34
Methionine, %	0.52	0.48	0.5
Lysine, %	1.3	1.1	1.1
Methionine + cystine, %	1.03	0.92	0.84
Treonine	0.8	0.76	0.71

RESULTS AND DISCUSSION

Regarding Table 3 shows that yeast has developed significantly over the number of white blood cells (p<0.05). The highest white blood cells to treatment 0.2% and lowest treatment is to control. It seems that the yeast microbial interactions and effects on local immune stimulation is an increase in white blood cells and increase immunity. These results are accordance with findings of Rahimi and Khaksefidi [13], Al-Kassie *et al.* [14], Thongsong *et al.* [15] and Zareshahneh *et al* [20] but are not accordance with findings of Shareef and Al-Dabbagh [11] and Golian *et al.* [16]. This incoherence may be for consuming level or kind of applied yeast.

Also, results show that *Saccharomysec cerevisiae* has developed significantly the R.B.C, M.C.H, M.C.V, M.C.H.C, H.C.T, H.G.B (p<0.05). The highest white blood cells to treatment 2% and lowest treatment is to control. The results can be concluded that the yeast phosphatase activity of phytate degradation and increase of iron ions in the blood the increased availability of iron increases

Table 3: Effect of using *Saccharomyces Cerevisiae* on blood factor of broiler chicken

Parameter	Treatment					SE	Significant
	0	0.5	1	1.5	2		
W.B.C ($\times 10^3 \mu\text{l}$)	23.39 ^c	23.66 ^c	24.17 ^b	24.67 ^a	24.76 ^a	0.138	*
R.B.C ($\times 10^6 \mu\text{l}$)	2.16 ^c	2.29 ^b	2.33 ^b	2.33 ^b	2.53 ^a	0.013	*
H.G.B (g/dl)	9.99 ^c	10.04 ^c	10.66 ^b	10.81 ^b	12.49 ^a	0.06	*
H.C.T (%)	28.69 ^d	29.93 ^c	30.89 ^b	31.23 ^b	34.96 ^a	0.175	*
M.C.V (fl)	127.87 ^d	132.22 ^c	132.87 ^c	135.23 ^b	138.15 ^a	0.757	*
M.C.H (pg)	42.95 ^d	45.78 ^c	46.29 ^{bc}	46.79 ^b	49.35 ^a	0.259	*
M.C.H.C (g/dl)	33.41 ^d	34.04 ^c	34.79 ^b	34.96 ^b	35.66 ^a	0.196	*
R.D.W	17.98 ^c	18.19 ^{bc}	18.35 ^b	18.49 ^b	18.99 ^a	0.105	*
P.L.T(ml/m ³)	3.03 ^d	5.92 ^c	5.99 ^c	8.99 ^b	9.94 ^a	0.045	*

Different letters in each column indicate significant differences at the 5% level.

hemoglobin synthesis, red and other factors. These results are accordance with findings of Paryad and Mahmoudi [12], Thongsong *et al.* [15] but are not accordance with findings of Agawane *et al.* [10], Al-Kassie *et al.* [14], Djouvinov *et al.* [17], balachandar *et al.* [19] and Zareshahneh *et al.* [20]. This incoherence may be for consuming level or kind of applied yeast.

In conclusion, the results of this study showed that *Saccharomyces cerevisiae* has a significant effect on blood factor and level 0.2% yeast is more suitable than others and will economize food portion and increase interest and health and safety will result in broilers.

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