# EFFECT OF BREED AND GROWTH PROMOTERS ON THE PERFORMANCE OF BROILERS

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## ABSTRACT

*This work was conducted to study the effect of breed and growth promoters on the performance (growth performance, carcass traits and some blood pictures including total and differential leucocytic counts) of broiler chickens. A total number of 180 unsexed one day old chicks of Cobb breed and 180 unsexed one day old chicks of Hubbard breed were used in this experiment. The chicks of each breed were allocated randomly into three treatments (probiotic Primalac® at dose of 1 g/kg ration, enzyme Allzyme® SSF at dose of 200 g/ton ration and a combinations of both) with control group for each treatment. Each treatment has three replicates. The results showed that dietary supplementation with Allzyme® (200 g/ton diet) in Hubbard breed improved body weight (2100g) and body weight gain (2056.77g). Hubbard breed showed numerical higher final body weight (2022.05g) and final body weight gain (1979.17g) than that of Cobb breed (1983.78g and 1941.02, respectively) for final body weight and body weight gain, respectively. The different dietary treatments had no significant effect on total relative growth rate and total feed conversion ratio in both breed. There were significant effects (P<0.05) among all treatments of both breed for total feed intake but breed had no significant effect for total feed intake. There were significant effects (P<0.05) among all treatments of both breed for breast % and drumsticks %. Cobb Primalac treated group showed the highest breast % (25.59%) compared with other treated or control group. Breed had significant effect (P<0.05) in case of drumsticks % while, it had no significant effect (P>0.05) on either breast or thighs %. There were significant increases (P<0.05) among all dietary treated groups comparing with the control groups for total leucocytic count, lymphocyte and neutrophile count. Also, the results showed that there were significant effects (P<0.05) among all treatment of both breeds for monocyte and esinophile count. Breed had significant effect (P<0.05) on total leucocytic count, lymphocyte and neutrophile count while, breed had no significant effect (P>0.05) on monocyte and esinophile count.*

*The results could be concluded that Allzyme® play an important role as growth promoters in both breeds. Allzyme® and Primalac® improved the immune response of broilers.*

## INTRODUCTION

Poultry industry has developed in several aspects such as nutrition, genetics, and mangement to maximize the efficiency of growth performance and meat yield. However nowadays, The Poultry industry has focus more attention towards public concern for environmental and food safety **(Gunal et al., 2006)**.Today,natural substances which would have positive effect on chicken growth and feed conversion such as probiotics, prebiotics, enzymes, acidifiers, antioxidants, and phytogene additives **(Peric et al., 2009)**. Probiotics are live microbial feed supplement which beneficially affects the host animal by improving its intestinal microbial balance **Fuller (1989)**. Soybean meal (SBM) is the conventional and relatively inexpensive protein source in broiler diets, but it contains a number of antinutritional factors inhibiting nutrient utilization among potential factors reducing nutrient bioavilability are the non starch poly saccharides (NSP). NSPs are complex high molecular weight carbohydrates found in the structure of plant cell wall so supplementation of NSPs degrading enzymes may not only reduce the anti nutritive effects of NSPs, but also releases some nutrients from these, which could be utilized by the birds **(Balamurugan and Chandrasekaran, 2010)**. Enzyme supplementation might improve broiler performance by improving nutrient digestibility. This mechanism might be induced, at least partially, by a reduction of the viscosity **(Lazaro et al. 2003)**. The aim of this study is to investigate the effect of breed and growth promoters (probiotic, enzyme and combination of them) on broiler's performance including growth traits and carcass traits. Moreover, some blood pictures including total and differential leucocytic counts were also carried out.

## MATERIALS AND METHODS

The experiment of this study was carried out at Faculty of Veterinary Medicine, Mansoura University at October, November and December 2010 to investigate the effect of breed and growth promoters on the performance of broilers. A total number of 180 unsexed one day old chicks of Cobb breed and 180 unsexed one day old chicks of Hubbard breed were used in this experiment. The chicks of each breed were allocated randomly into three treatments with control group for each treatment. Moreover, each treatment has three replicates. Each replicate has 15 birds with birds density of 10 birds /$m^2$. The broiler chicks of control group of each treatment of both breed were fed on basal diet without any supplementation. The broiler chicks of both breeds of first treatment were fed on basal diet mixed with probiotic Primalac® (1 g/kg ration). The broiler chicks of both breeds of second treatment were fed on basal diet mixed with enzyme Allzyme® SSF (200 g/ton ration). The broiler chicks of both breeds of third treatment were fed on basal diet mixed with combinations of both probiotic PrimalacR and enzyme Allzyme® at a dose of Primalac®1 g/kg ration and AllzymeR 200 g/ton ration. Birds were fed commercial mash ration obtained from industrial company for ration, El Mansoura city. The ration used along the experimental work assumed to be balanced and formulated to satisfy adequate supply of all nutrients recommended by National Research Council **(NRC, 1994)** according to the

**The chemical analysis (%) of the ration as in Table(1):**

| Ingredient | Startar ration (0- 2 week) | Grower ration (3-4 week) | Finisher ration (5-6 week) |
|---|---|---|---|
| **Crude protein (not less than)** | 23 % | 21% | 17.5% |
| **Crude fat (not less than)** | 6.91% | 3.2% | 3.41% |
| **Crude fiber (not more than)** | 3.68% | 3.44% | 2.99% |
| **Metabolized energy (not less than)** | 3136 kcal/kg | 2950 kcal/ kg | 3000 kcal/ kg |

Industrial Company for ration in table (1).

Parameters that affecting performance of broilers were recorded which included growth traits (individual body weight were recorded weekly, body weight gain, relative growth rate feed intake and feed conversion ratio) and carcass traits (dressing percentage and weight of different major cuts). Some blood pictures including total and differential leucocytic counts (lymphocyte, neutrophile, monocyte and esinophile) were also carried out.

**Statistical Handling:**

Data collected, arranged, summarized and then analyzed using the computer programs SPSS/PC+ (2001). All data obtained were subjected to statistical analysis of variance (ANOVA test) two way analysis of variance using General liner Model to estimate the effect of breed and growth promoters on the performance of broilers as the following model:

$$Y_{ijk} = \alpha_i + \beta_j + (\alpha\beta_{ij}) + e_{ijk}$$

Where $Y_{ij}$ = an observed value.

$\alpha_i$= effect of genotype (breed).

$\beta_j$= effect of treatment.

$(\alpha\beta)_{ij}$ = effect due to interaction between genotype and treatments.

$e_{ijk}$ = effect of error.

## *Results and Discussion*

**Growth performance:** The effect of genotype and growth promoters on the performance of broilers is presented in Table (2). The results of the presented study revealed significant increase ($P<0.05$) in the final body weight for all dietary treated groups of both breeds compared with control groups. The highest significant increase in body weight was observed in Hubbard Allzyme treated group (2100g). In contrary, the lowest value of body weight was 1794.38g for Hubbard Primalac control group Also, the final body weight of Hubbard breed showed numerical increases (2022.25g) than that of Cobb breed (1983.78g) and the difference was not significant ($P> 0.05$). These results are in agreement with Shakouri et al. (2009), Ben_ea et al. (2010) and Hooge et al. (2010) who found that broiler chicken final body weight with the dietary enzyme complex product (Allzyme® SSF) was found to be greater than unsupplemented chicken body weight. Igantova et al. (2009) where they reported that average body weight improved in broiler chicken feed on supplemented diet with probiotics compared with those control group. Also, these finding are in harmony agreement with those obtained by Nayebpor et al. (2007) who found that feeding

broiler chickens on direct fed microbial (Primalac) probiotic was significantly (P<0.05) improved body weights. **Walaa et al. (2008)** and **Ashayerizadeh et al. (2009)** who demonstrated that Supplementation of Primalac to broilers diet improved weight of birds by 73.59 compared to control group.

On the other hand, the obtained results disagreed with those reported with **Sayyazadeh et al. (2006), Mushtaq et al. (2007), Chauynarong et al. (2008)** who mentioned that addition of microbial enzymes to broiler ration had no significant effect on body weight. **O'Dea et al., (2006)** and **Akinleye et al (2008)** who found that Probiotics had no significant (P>0.05) effect on broiler body weight. These differences between reported results could be related to management and environmental conditions. Majority of authors concluded that the effect of probiotics depended on the combination of bacterial strains contained in the probiotic preparation, level of its inclusion in the mixture, composition of mixture, quality of chickens and conditions of the environment in the production facility **(Jin et al., 1997; Patterson and Brukholder, 2003)**. The growth promoting effect of enzymes could be attributed to exogenous enzymes have been shown to alleviate the adverse effects of high viscosity of digesta in the small intestine and to improve digestion **(Petersen et al. 1999)**.

Hubbard breed showed significant increase in total body weight gain for treated groups compared to control groups. The highest significant value was 2056.77g observed in Hubbard Allzyme treated group. These results are in consistence with the results of **Gracia et al. (2003)** and **Lazaro et al. (2003), Cowieson** and **Ravindran (2008), Owens et al. (2008)** who studied the effect of allzyme PTR on broiler performance and found that live weight gain significantly improved compared to the negative control diets. **Walaa et al. (2008)** and **Ashayerizadeh et al. (2009)** where they found that Supplementation of Primalac to broilers diet improved weight gain of birds compared to control group. On the other hand, the previous results not in accordance with those of **Mehri et al. (2010)** who noticed that body weight gain not influenced by dietary supplementation of broiler diet with exogenous enzymes. **Akinleye et al. (2008)** who found that dietary supplementation of broiler diet with probiotic had no significant (P> 0.05) effect on body weight gain.

In regard to the relative growth rate 0 - 6 week, the results showed there were no significant differences (P>0.05) among all treatments of both breeds. Also, there were no significant differences (P>0.05) between both breed under investigation for all treatments. These results agreed with **Mushtaq et al. (2007)** who showed that enzymes had no pronounced effect on growth performance of broilers. Also, **Akinleye et al. (2008)** who found that probiotic supplementation to broilers diet had no significant effect on relative growth rate but disagreed with **Hajati (2010) and Midili,** and **Tuncer. (2001)** who mentioned that simultaneously using probiotics and enzymes in broiler diets, improve their growth performance.

There were significant effects (P<0.05) among all treatment of both breeds for total feed intake. The highest feed intake was

3775.54g for Hubbard Allzyme control group. The primalac treated group of both breed showed significant increase (3450.41g and 3511.19g) in feed intake compared to their control groups (3362.83g and 3253.45), respectively. On the other hand, Primalac in combination with Allzyme treated group of both Cobb and Hubbard breeds showed significant decrease in total feed intake which were 3602.24g and 3618.15g compared to their control groups (3691.87g and 3637.58g, respectively). Also, Hubbard Allzyme control group was lower (3706.74g) than the control group (3775.54) but there were no significant differences in Cobb Allzyme treated and control group. Morever, there were no significant differences (P>0.05) between Cobb and Hubbard breeds (3592.05g and 3608.17g, respectively) under investigation for all treatments.

Gracia et al. (2003) and Lazaro et al. (2003), Shakouri et al. (2009) they observed that enzyme supplementation to broiler diet improved feed intake. Ignatova et al. (2009) Jouybari et al (2009) and Bahram Pour and Kermanashahi (2010) and Falaki et al. (2011) who found that dietary supplementation of broiler diet with probiotic (Primalac 900 g $ton^{1-}$) was significantly increased feed intake while Akinleye et al. (2008), mentioned that probiotic supplementation reduced feed intake of broiler chicken than those of control group. This result agreed with those of Nadia et al. (2001) and Omar (2003) where they found that there were significant breed effect (P < 0.05) on total ration consumption.

In regard to the total feed conversion 0 - 6 weeks, the results showed there were no significant effects (P>0.05) among all treatments of both breeds. Also, there were no significant differences (P>0.05) between both breed under investigation for all treatments. These results are in consistence of **Sayyazadeh et al. (2006)** and **Mushtaq et al. (2007)** showed that enzyme supplementation in broiler diet had no significant effect on feed conversion ratio. **O'Dea et al., (2006), Akinleye et al. (2008)** who found that probiotic had no significant effect on feed coversion ratio. On the other hand, **Hajati (2010), Mehri et al. (2010)** investigated dietary supplementation of broiler diets with exogenous enzyme significantly improved feed conversion ratio. **Jouybari et al (2009)** observed that probiotic fed broilers showed best FCR during starter, grower and finisher period.

**Carcass Traits:** The effect of genotype and growth promoters on carcass traits of broiler chickens is given in Table (3). The results showed that there were significant effects (P < 0.05) among all treatment of both breeds on live weight at slaughtering. The highest value was 2161.67g for Hubbard Allzyme treated group, while the lowest value was 1930g for Cobb Primalac control group. The results showed that there were no significant effects (P>0.05) among all treatment of both breeds on either dressed carcass weight or dressing percent. In general, there were no significant differences between the two breeds under investigation for all treatments for dressed carcass weight or dressing percent. These results are in agreement of **Karaoglu and Durdag (2005)** and **Ignatova et al. (2009)** where they mentioned that broilers fed on diet supplemented with probiotic had no significant effect on dressing percentage. Also, **Sherif (2009)** who found that adding graded levels of

probiotics and enzyme in plant-protein diets for broiler chicks did not affect carcass traits of birds. These results disagreed with **Hajati (2010)** who found that dressing percentage were superior in probiotic fed group than control one.

The effect of genotype and growth promoters on major carcass cuts weights expressed as a percentage to live body weight broiler chickens is presented in Table (4). The results showed that breast yield (%) and drumsticks (%) had significant effect (P<0.05) among all treatments of both breeds. The highly significant value was 25.59% for Cobb Primalac treated group, Genotype (breed) had no significant effect on breast%. So Cobb breed did not significantly different from Hubbard Breed for breast% (23.51% for Cobb and 23.46% for Huhhard breed) The highest value of drumsticks (%) was 11.84% for Cobb Primalac in combination with Allzyme control group. Meanwhile, The lowest value was 9.84 for Hubbard Allzyme control group. Generally, there were significant effect of both breed. Cobb breed was higher (11.09) than that of Hubbard breed (10.43) for drumsticks (%). These results agreed with **Akinleye et al. (2008)** and **Ashayerizadeh et al. (2009)** who demonstrated that the highest values (P>0.05) of breast was recorded for broilers fed the diet supplemented with primalac **Ghazalah et al. (2005)** who showed that broilers fed corn-soybean meal based diet with enzyme addition did not improve yield of breast. **Nikolova** and **Pavlovski (2009)** where they reported that genotype had influence only on yield of breasts, chicken of Cobb 500 genotype had significant (p<0.05) bigger yield of breast (20.43%) than chicken of Hubbard genotype (19.31%) but that differences were not statistically significant. They stated that drum stick was slightly bigger in Cobb 500 than Hubbard genotype. Thigh % had no significant (P>0.05) effect of all treatments of both breeds. Also, there were no significant differences between both Cobb and Hubbard breed for all treatments. **Karaoglu and Durdag (2005)** agreed with these results but **Akinleye et al. (2008)** disagreed. **Nikolova** and **Pavlovski (2009)** who mentioned that genotype had no significant effect on thighs percent of broilers as Cobb breed not significantly differ from Hubbard one for thighs %.

**Blood Picture:** The effect of genotype and growth promoters on total and differential leucocytic count of broiler chickens is presented in Table (5). The results showed significant increases (P<0.05) among all dietary treated groups comparing with the control groups for total leucocytic count, lymphocyte and neutrophile count. Also, the results showed that there were significant effects (P<0.05) of all treatment of both breeds for monocyte and esinophile count. Cobb breed was significantly higher than that of Hubbard breed for total leucocytic count, lymphocyte and neutrophile count while, breed had no significant effect (P>0.05) on monocyte and esinophile count. These results agreed with Shoeib and Madian (2002) mentioned that supplementation of broilers diets with probiotic resulted in increase in leucocytic count and percentage of lymphocyte and monocyte in the supplemented group than those of control one. Dawoud (2000) found that dietary supplementation of probiotic to broiler diet increase total leucocytic count, lymphocyte count and neutrophile count. **Mehri et al. (2010)** mentioned

that enzyme supplementation to broiler diets increased lymphocyte, and decreased heterophil and heterophil: lymphocyte (H:L) ratio ($p<0.05$). Thus, it improved chickens immune system while, **Akinleye et al. (2008)** showed that there were no significant effect ($P>0.05$) on haematological parameters (lymphocyte, neutrophill %), among treated group supplemented with probiotic and control group. But only, there was increase ($10.83 \times 10^6/mm^3$) WBCs in treated than control ($9.93 \times 10^6/mm^3$). **Mehri et al. (2010)** who reported that β-mannanase supplementation to broiler diets did not influence the eosinophils and monocytes. The direct effect might be related to stimulate the lymphatic tissue **(Kabir et al., 2004)**, whereas the indirect effect may occur via changing the microbial population of the lumen of gastrointestinal tract.

**Table (2):** The Effect of Genotype and Growth Promoters on the Performance of Broiler Chickens through the overall experimental period 0 - 6 Weeks (Means ± SE).

| Breed | Treatment | Parameters | | | | | |
|---|---|---|---|---|---|---|---|
| | | Initial body weight (g) | Final body weight (g) | Body weight gain (g) | Relative growth rate | Feed intake | Feed conversion ratio |
| Cobb | Primalac | 42.12±0.54$^{a}$ | 1957.30±34.22$^{abc}$ | 1915.37±33.91$^{a}$ | 191.53±0.12$^{a}$ | 3450.41±21.4$^{a}$ | 1.82±0.03$^{a}$ |
| | Control | 43.96±0.59$^{a}$ | 1896.82±52.01$^{abc}$ | 1786.67±51.45$^{a}$ | 190.90±0.15$^{a}$ | 3362.83±6.04$^{a}$ | 1.91±0.05$^{a}$ |
| | Allzyme | 42.20±0.43$^{a}$ | 1975.28±29.00$^{abc}$ | 1933.08±28.64$^{abc}$ | 191.61±0.06$^{a}$ | 3679.10±10.5$^{abc}$ | 1.91±0.03$^{a}$ |
| | Control | 43.04±0.76$^{a}$ | 2014.23±53.22$^{abc}$ | 1971.19±52.49$^{abc}$ | 191.61±0.08$^{a}$ | 3673.40±6.48$^{abc}$ | 1.87±0.05$^{a}$ |
| | Primalac+Allzyme | 42.81±0.93$^{a}$ | 2005.71±31.94$^{abc}$ | 1962.90±31.68$^{abc}$ | 191.60±0.09$^{a}$ | 3602.24±36.51$^{a}$ | 1.85±0.02$^{a}$ |
| | Control | 44.68±0.59$^{a}$ | 2077.50±39.31$^{abc}$ | 2032.82±38.88$^{abc}$ | 191.57±0.09$^{a}$ | 3691.87±5.74$^{abc}$ | 1.82±0.03$^{a}$ |
| | Total | 42.74±0.23$^{A}$ | 1983.78±15.60$^{A}$ | 1941.02±15.45$^{A}$ | 191.52±0.05$^{A}$ | 3592.05±13.49$^{A}$ | 1.86±0.01$^{A}$ |
| Hubbard | Primalac | 43.72±0.48$^{a}$ | 1993.59±34.70$^{abc}$ | 1949.87±34.28$^{abc}$ | 191.38±0.08$^{a}$ | 3511.19±12.19$^{a}$ | 1.80±0.03$^{a}$ |
| | Control | 44.65±0.90$^{a}$ | 1794.38±56.79$^{a}$ | 1749.72±55.93$^{a}$ | 190.26±0.12$^{a}$ | 3253.45±5.20$^{a}$ | 1.87±0.05$^{a}$ |
| | Allzyme | 43.22±0.71$^{a}$ | 2100.00±32.66$^{a}$ | 2056.77±32.30$^{a}$ | 191.90±0.12$^{a}$ | 3706.74±30.87$^{abc}$ | 1.81±0.02$^{a}$ |
| | Control | 41.33±0.50$^{a}$ | 1982.08±45.74$^{abc}$ | 1940.75±45.25$^{abc}$ | 191.81±0.09$^{a}$ | 3775.54±6.24$^{a}$ | 1.96±0.04$^{a}$ |
| | Primalac+Allzyme | 43.47±0.47$^{a}$ | 2056.72±27.75$^{abc}$ | 2013.24±27.42$^{abc}$ | 191.71±0.07$^{a}$ | 3618.15±9.85$^{abc}$ | 1.80±0.02$^{a}$ |
| | Control | 43.56±0.49$^{a}$ | 1985.00±54.44$^{abc}$ | 1941.44±54.04$^{abc}$ | 191.38±0.15$^{a}$ | 3637.58±5.48$^{abc}$ | 1.88±0.05$^{a}$ |
| | Total | 43.35±0.26$^{A}$ | 2022.25±16.83$^{A}$ | 1979.17±16.68$^{A}$ | 191.57±0.06$^{A}$ | 3608.17±14.43$^{A}$ | 1.83±0.01$^{A}$ |

**Table (3):** The Effect of Genotype and Growth Promoters on Carcass Traits of Broiler Chickens (Means ± SE).

| Breed | Treatment | No | Live weight(g) | Dressed wt (g) | Dressing % |
|---|---|---|---|---|---|
| Cobb | Primalac | 3 | 2026.67±31.79$^{bc}$ | 1528.33±34.44$^{a}$ | 75.40$^{a}$±0.56 |
| | Control | 2 | 1930.00±30.00$^{c}$ | 1440.00±15.00$^{a}$ | 74.62$^{a}$±0.38 |
| | Allzyme | 3 | 2023.33±14.53$^{bc}$ | 1453.33±78.01$^{a}$ | 71.67$^{a}$±3.46 |
| | Control | 2 | 2052.50±32.50$^{ab}$ | 1567.50±12.50$^{a}$ | 76.29$^{a}$±0.69 |
| | Primalac+Allzyme | 3 | 2008.33±6.01$^{bc}$ | 1505.00±10.44$^{a}$ | 74.87$^{a}$±0.40 |
| | Control | 2 | 2007.50±80.00$^{bc}$ | 1517.50±37.50$^{a}$ | 75.54$^{a}$±1.14 |
| | Total | 15 | 2010.00±14.30$^{B}$ | 1500.67±18.74$^{A}$ | 74.58$^{A}$±0.74 |
| Hubbard | Primalac | 3 | 2090.00±72.85$^{ab}$ | 1539.67±66.43$^{a}$ | 73.51$^{a}$±0.71 |
| | Control | 2 | 2032.50±17.49$^{bc}$ | 1482.50±27.50$^{a}$ | 72.84$^{a}$±0.80 |
| | Allzyme | 3 | 2161.67±29.06$^{a}$ | 1588.33±54.49$^{a}$ | 73.27$^{a}$±1.62 |
| | Control | 2 | 2035.00±5.00$^{bc}$ | 1462.50±7.49$^{a}$ | 71.87$^{a}$±0.55 |
| | Primalac+Allzyme | 3 | 2116.67±35.28$^{ab}$ | 1548.33±50.85$^{a}$ | 73.11$^{a}$±1.21 |
| | Control | 2 | 2122.50±15.49$^{ab}$ | 1575.00±22.50$^{a}$ | 74.10$^{a}$±0.52 |
| | Total | 15 | 2099.00±19.08$^{A}$ | 1537.93±21.5 $^{A}$ | 73.15$^{A}$±0.47 |

**Table (4):** The Effect of Genotype and Growth Promoters on Major Carcass Cuts of Broiler Chickens (Means ± SE).

| Breed | Treatment | No | Breast% | Drumsticks% | Thighs% |
|---|---|---|---|---|---|
| Cobb | Primalac | 3 | 25.59±0.90$^{a}$ | 11.13±0.45$^{abc}$ | 19.30±0.14$^{a}$ |
| | Control | 2 | 24.18±0.26$^{abc}$ | 11.12±0.08$^{abc}$ | 18.87±0.38$^{a}$ |
| | Allzyme | 3 | 22.14±1.22$^{abc}$ | 10.71±0.36$^{abcd}$ | 20.25±0.58$^{a}$ |
| | Control | 2 | 23.86±0.78$^{abcd}$ | 10.48±0.01$^{abcd}$ | 20.68±0.71$^{a}$ |
| | Primalac+Allzyme | 3 | 22.97±0.73$^{abc}$ | 11.33±0.44$^{abc}$ | 19.35±0.60$^{a}$ |
| | Control | 2 | 22.28±0.26$^{abc}$ | 11.84±0.23$^{ab}$ | 18.98±0.48$^{a}$ |
| | Total | 15 | 23.51±0.45$^{A}$ | 11.09±0.17$^{A}$ | 19.58±0.24$^{A}$ |
| Hubbard | Primalac | 3 | 24.35±1.03$^{abc}$ | 10.51±0.58$^{abcd}$ | 19.48±0.56$^{a}$ |
| | Control | 2 | 22.71±0.11$^{abc}$ | 10.39±0.27$^{abcd}$ | 19.88±0.14$^{a}$ |
| | Allzyme | 3 | 21.65±0.31$^{c}$ | 11.21±0.38$^{abc}$ | 19.40 ±0.25$^{a}$ |
| | Control | 2 | 23.50±0.66$^{abcd}$ | 9.84 ±0.10$^{d}$ | 19.10±0.30$^{a}$ |
| | Primalac+Allzyme | 3 | 23.81±0.57$^{abcd}$ | 10.27±0.38$^{abcd}$ | 19.70±0.86$^{a}$ |
| | Control | 2 | 25.06±0.15$^{ab}$ | 10.03±0.06$^{bcd}$ | 20.40 ±0.09$^{a}$ |
| | Total | 15 | 23.46±0.37$^{A}$ | 10.43±0.18$^{B}$ | 19.64 ±0.40$^{A}$ |

**Table (5):** Effect of Genotype and Growth Promoters on Total and Differential Leucocytic Count ($10^3/\mu l$) of Broiler Chickens (Means ± SE).

| Breed | Treatment | No | Total Leucocytic Count | Differential Leucocytic Count | | | |
|---|---|---|---|---|---|---|---|
| | | | | Lymphocyte | Neutrophile | Monocyte | Esinophile |
| Cobb | Primalac | 3 | 54.67±5.21$^{abc}$ | 37.42±2.41$^{a}$ | 15.19±2.79$^{abc}$ | 1.87± 1.28$^{a}$ | 0.17± 0.17$^{ab}$ |
| | Control | 2 | 41.00±3.00$^{bcd}$ | 32.66±0.74$^{abc}$ | 5.68±0.40$^{cd}$ | 2.20± 2.20$^{a}$ | 0.44± 0.44$^{ab}$ |
| | Allzyme | 3 | 48.00±3.06$^{abcd}$ | 33.87±1.82$^{ab}$ | 10.31b±1.62$^{abcd}$ | 3.493±0.26$^{a}$ | 0.00± 0.00$^{b}$ |
| | Control | 2 | 40.00±0.00$^{bcd}$ | 28.00±0.00$^{abc}$ | 10.80± 0.40$^{abcd}$ | 0.80± 0.80$^{a}$ | 0.40±0.40$^{ab}$ |
| | Primalac+Allzyme | 3 | 56.67±1.70$^{a}$ | 32.33±1.70$^{abc}$ | 18.31±3.52$^{a}$ | 3.80±0.50$^{a}$ | 2.23± 0.59$^{a}$ |
| | Control | 2 | 43.00±3.00$^{bcd}$ | 28.26±0.26$^{abc}$ | 11.76±2.96$^{abcd}$ | 2.98± 0.22$^{a}$ | 0.00± 0.00$^{b}$ |
| | Total | 15 | 48.40±2.08$^{a}$ | 32.58±1.04$^{a}$ | 12.53±1.37$^{a}$ | 2.63± 0.43$^{a}$ | 0.59± 0.25$^{a}$ |
| Hub-bard | Primalac | 3 | 45.00± 0.58$^{a}$ | 25.31±0.85$^{abc}$ | 13.40±2.42$^{abcd}$ | 5.94± 2.41$^{a}$ | 0.44± 0.25$^{ab}$ |
| | Control | 2 | 21.00±1.00$^{cd}$ | 10.12±1.32$^{c}$ | 8.84± 0.84$^{abcde}$ | 1.42± 0.98$^{a}$ | 0.62±0.18$^{ab}$ |
| | Allzyme | 3 | 36.00±1.16$^{ab}$ | 20.72±1.94$^{abc}$ | 12.41± 1.01$^{abcd}$ | 1.92± 0.48$^{a}$ | 0.95± 0.21$^{a}$ |
| | Control | 2 | 25.00±1.00$^{bcd}$ | 16.76±0.92$^{abc}$ | 7.22±0.46$^{bcde}$ | 0.76± 0.28$^{a}$ | 0.26± 0.26$^{ab}$ |
| | Primalac+Allzyme | 3 | 24.00±4.00$^{bcd}$ | 16.24±2.44$^{abc}$ | 6.67±1.47$^{cde}$ | 1.09± 0.15$^{a}$ | 0.00± 0.00$^{b}$ |
| | Control | 2 | 15.00±1.00$^{d}$ | 9.86±0.06$^{c}$ | 4.40±1.04$^{e}$ | 0.58± 0.26$^{a}$ | 0.16± 0.16$^{ab}$ |
| | Total | 15 | 29.13±2.81$^{b}$ | 17.35±1.56$^{b}$ | 9.22±1.01$^{b}$ | 2.16± 0.67$^{a}$ | 0.42± 0.11$^{a}$ |

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# الملخص العربى

## تأثير السلالة ومنشطات النمو على الأداء لدجاج اللحم

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أجريت هذه الدراسة لبيان تأثير السلالة ومنشطات النمو على الأداء لدجاج اللحم. حيث اشتملت الدراسة قياس بعض الصفات الخاصه بالنمو، بعض صفات الذبيحه وكذلك بعض الصفات المناعية.

كان العدد الإجمالي للطيور 360 طائر عمر يوم ( 180 طائرمن سلالة الكوب و 180 طائر من سلالة الهبرد ) ,حيث قسمت الطيورفى كل سلالة الى ثلاث معاملات (البريمالاك كبروبايوتك ويضاف الى العليقه بمعدل 1جم/ كيلو عليقه ,الاولزيم الذى يحتوى على مجموعه من الانزيمات ويضاف الى العليقه بمعدل 200 جم/ طن عليقه وتوليفه من البروبايوتك مع الانزيمات) مع وجود مجموعة ضابطة لكل معاملة وكان أيضا هناك ثلاث تكرارات في كل معاملة .

وكانت أهم النتائج المتحصل ما يلى:

استخدام الاولزيم بمعدل 200 جم/ طن عليقه في سلالة الهبرد أعطى أفضل النتائج الخاصة بوزن الجسم (2100 جم) ومعدل اكتساب الوزن (1979.17 جم) مقارنه بالمجموعات الاخرى ,كما أظهرت سلالة الهبرد زيادة غير معنوية فى معدل وزن الجسم (2022.25 جم) ومعدل اكتساب الوزن ( 2056.77 جم) عن سلالة الكوب (1983.87 جم & 1941.02 جم) بالنسبة لوزن الجسم ومعدل اكتساب الوزن على الترتيب طوال فترة التجربه ( 6 اسابيع).

كما لوحظ عدم وجود فروق معنوية فى معدل النمو النسبى الكلى وكذلك معدل التحويل الغذائى الكلى بين كل المجموعات المعاملة فى كل من السلالتين . ولكن اظهرت النتائج وجود فروق معنوية بالنسبة لمعدل استهلاك العلف لكل المجموعات المعاملة فى كل من السلالتين. كما لوحظ عدم وجود فروق معنوية بين كل من سلالة الكوب والهبرد فى معدل استهلاك العلف.

اوضحت النتائج اختلافا معنويا في نسبة وزن الصدر(breast) وكذلك نسبة وزن كاحل الدجاج (drumstick) ولكن لم يظهر اختلافا معنويا فى نسبة وزن الفخذين .(thighs) كما لوحظ ان مجموعة البريمالاك فى سلالة الكوب اظهرت اعلى (25.59%) نسبة وزن الصدر (breast) مقارنه بالمجموعات الأخرى أو المجموعة الضابطة. كما اظهرت النتائج ان السلالة كان لها تأثير معنوى على نسبة وزن كاحل الدجاج (drumstick) وتأثيرغيرمعنوي على كل من نسبة وزن الصدر والفخذين.

اظهرت النتائج زيادة معنوية فى عدد خلايا الدم البيضا ءالكمى وعدد الخلايا الليمفاوية (lymphocytes) في المجموعات المعاملة

بمنشطات النموعن المجموعات الضابطة. كما لوحظ زيادة معنوية فى عدد الخلايا متعددة الصبغة (Neutrophile) و عدد الخلايا حامضية الصبغة (Esinophile) والخلايا أحادية الصبغة .(Monocyte) كما اظهرت النتائج اختلافا معنويا بين السلالتين حيث أظهرت سلاله الكوب زيادة معنوية في عدد خلايا الدم البيضاء وعدد الخلايا الليمفاوية (lymphocytes) وعدد الخلايا متعددة الصبغة (Neutrophile) عن الهبرد ، بينما لم يكن هناك تأثيرا معنويا بين السلاتين فى عدد الخلايا حامضية الصبغة (Esinophile) والخلايا أحادية الصبغة .(Monocyte)

وتخلص النتائج إلي أهمية الأولزيم كمنشط للنمو في السلالتين ، وأن الأولزيم وكذلك البريمالاك قد حسنا من الاستجابة المناعية لدجاج اللحم.