

IMPACT OF SUPPLEMENTING BLACK SEED AND GINGER POWDER ON PRODUCTIVE AND PHYSIOLOGICAL PERFORMANCE OF PEKINI DUCKLINGS

by Mohammed Mustafa

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Mohammed M. Abdul Azzez, Rehab H. Ali and Yousif H. Kreem

Department of Animal Production Technical Institute Al- Furat AL-Awsat Technical University, 51009 Babylon, Iraq

Corresponding authors: mohammed.mustafa@atu.edu.iq, inm.rehb@atu.edu.iq

Abstract

The research had been conducted to investigate the supplementing effect of black seed and Ginger powder on productive and physiological performance of Pekini ducklings. A total number of 64, one day old Pekini duck chicks were used in the experiment. Those chicks were randomly distributed of 4 equal treatments. Four rations were used. T1: control. T2: 0.5 gm\Kg black seed. T3: 0.5 gm\Kg Ginger. T4: 0.25 black seed plus 0.25 gm\Kg Ginger. Results indicated a significant transcendence ($P < 0.05$) of live body weights of ducks in the fourth treatment during the 6th and 9th week with high transcendence ($P < 0.01$) during other weeks. Weight gain were significantly transcendent ($P < 0.01$) in the fourth treatment during the 3rd and 4th week as well as the total weight gain. Feed utilization increased significantly ($P < 0.05$) in the fourth treatment during the 4th and 9th week. Meanwhile feed utilization increased highly significant ($P < 0.01$) during the 3rd and 8th week. Feed conversion ratio was improved significantly ($P < 0.05$) in the treatment during the 5th week. Supplementation of black seed and Ginger blend caused highly significant ($P < 0.01$) increase of total blood protein with highly significant reduction ($P < 0.01$) of blood glucose and cholesterol.

Keywords: black seed, ginger powder, Pekini ducklings.

Introduction

The latest year had been witnessed the usage of natural products as well as medical herbs as alternative antibiotic growth promoters for poultry (Gunal *et al.* 2006). Black seed (*Nigella Sativa*) is one of the most important natural product which had been used as feed supplement for poultry due it's active constituents which play a important role as antioxidant such as Thymoquin one and Glutathione (Naji *et al.* 1999; Jang, 2011). Antiooids protect body tissues against the deleterious effect of oxidation and free radicals formation in (Al-Ani, 1998).

El-Sayed and El-Hashem (2000) had been referred to the positive effect of black seed in improving the productive performance of broiler, this may be attributed to the high contents of essential fatty acids and phospholipids which play important role in construction of cellular walls of the body tissues.

Ginger (*Zingiber officinale*) is a medical herb, it contains active materials such as crude protein, crude fibers, ether extracts and vitamin C (Latona *et al.*, 2012).

Active ingredients of Ginger have different medical effects such as anti inflammatory and anti hyperglycemic (Ali *et al.*, 2008). More over Ginger has antimicrobial activity against certain types of pathogenic bacteria such as *Escherichia coli* and *Salmonella* (Dabes and Basyony, 2011).

The current study aimed to highlight on the impact of feed supplementation with black seed and Ginger and or their blend on the performance of Pekini ducks.

Materials and Methods

The research had been carried out in the poultry farm which belong to the Technical Institute Al-Mussaib during

the 22th of October to 25th 2019. A total number of 64, one old chicks of Pekini ducks were used in the experiment. Chicks were raised in pens, those pens were thoroughly cleaned and disinfected and finally fumigated by formaldehyde. All pens were supplied by all requirement which are essential for chickens raising. Chicks were randomly distributed on 4 equal treatment, each treatment included 16 chicks and each treatment included 2 equal replicates. Chicks feed on starter and finisher rations (Table 1). Rations were supplemented by black seed and ginger.

Treatments were arranged as follow :

T1 : Ordinary ration with out any supplement (control).

T2 : 0.5 gm\Kg black seed powder.

T3 : 0.5 gm\ Kg ginger powder.

T4 : 0.25 gm\Kg black seed + 0.25 gm\Kg ginger.

Live body weights, weight gains, consumed feed were calculated weekly as well as feed conversion ratio. At the end of the experiment, blood samples were collected from chicks in all treatments in order to evaluate some blood parameters.

Total plasma protein was evaluated by using a kit supplied from Biolabo company (French Company) according to (Wotton, 1964). Plasma cholesterol was evaluated according to (Franey and Elisa, 1969) a kit (Biolabo Company).

Plasma glucose was estimated according to (Asatoor and King, 1954) by using Biolabo kit. Results were statistically analysed by completely randomized design (CRD) according to (SAS, 2004). Duncan (1955) was used to compare the significant differences between treatments.

Table 1 : Components of starter and finisher rations with their chemical analysis.

| Feed material (%) | Starter (1 – 21) day | Finisher (21-56) days |
|-----------------------------|------------------------------|-----------------------|
| Yellow | 30 | 30 |
| Soya meal | 28 | 20 |
| Wheat | 27.7 | 35.5 |
| Animal protein concentrate | 10 | 10 |
| Plant oil | 3.0 | 3.0 |
| NaCl | 0.3 | 0.3 |
| Lime Stone | 1.0 | 1.0 |
| Total | 100 | 100 |
| | Calculated Chemical Analysis | |
| Metabolizable Energy Kca/Kg | 3068 | 3125.2 |
| Crude Protein (%) | 22.74 | 20.16 |
| Energy / Protein | 135.35 | 155.07 |
| Ca (%) | 0.97 | 1.0 |
| Available Phosphorous | 0.41 | 0.48 |
| Methionine + Cystein | 0.83 | 0.75 |
| Lysine | 1.02 | 0.95 |

Results and Discussion

Results revealed a significant increase ($P < 0.01$) of live body weights of ducks in the fourth treatment during the 6th and 9th week. Further more supplementation of black seed and ginger blend induced a highly significant transcendence ($P < 0.01$) of live body weights during the 3rd, 4th, 5th, 6th and 8th week in the fourth treatment (Table 2).

Supplementation of black seed and ginger powder blend led to a significant surpass ($P < 0.05$) of weekly weight gains in the fourth treatment during the 4th and 5th week as well as the total weight gains (Table 3). Corresponding the blend of black seed and ginger powder caused a significant increase ($P < 0.05$) of feed consumption during the 4th and 9th as well as the total feed consumption in the fourth treatment (Table 4).

Highly significant transcendence ($P < 0.01$) in feed consumption was noticed during the 3rd, 5th and 8th week due to supplementation of the blend consisting of black seed with ginger powder. Amelioration of live body weights with weight gains of Pekini duckling in the fourth treatment may be attributed to the synergistic effect of *N. sativa* with *Zingiber officinale* on those traits. *Nigella sativa* contains several ingredient S such as mineral elements like iron and copper. Additionally *N. sativa* contains high concentration of essential fatty acids and phospholipids which are important for construction of body tissues (Galal *et al.*, 2008). Those results are inconsistent with (Fahad and Al-Amedy, 2013).

More over *N. sativa* increases bile out flow which affects emulsion which increases lipase enzyme, thus it improves digestion and absorption (Azeem *et al.*, 2014). The noticed surpassing of live body weights and weight gains in addition to feed consumption of ducklings in the fourth treatment may be due to the synergism of ginger which plays an important role improvement of appetite them increasing feed utilization and increase live body weight and weight gains, those results are in agreement with (Abdul Kadhum *et al.*, 2014).

Table 5 illustrated a significant ($P < 0.05$) improvement of feed conversion ratio of ducklings in the fourth treatment during the 5th week. This improvement may be attributed to the supplementing effect of black seed and ginger powder. This result is compatible with (Al-Nidawi, 2003; Barazesh *et al.*, 2013). Supplementation of *N. sativa* and *Zingiber officinale* blend to the ducklings in the fourth treatment caused highly significant increase of plasmal total protein with ($P < 0.01$) highly significant reduction ($P < 0.01$) of plasmal glucose and cholesterol (Table 6). The significant effect of the blend which included *N. sativa* with *Zingiber officinale* may be attributed to the impact of both, since *N. sativa* contains active ingredients which reduces Reductase enzyme that is essential for cholesterol synthesis (Fahad and Al-Amedy, 2013).

Zingiber officinale posses an effect as antihypercholesterolemia (Abdul Kadhum *et al.*, 2014). *Nigella sativa* posses thymoquinone as an active component, this causes reduction of blood glucose (Al-Nidawy, 2003). Reduction of blood glucose may be attributed to the effect of *Zingiber officinale*. The result are compatible with (Abdul Kadum *et al.*, 2014). It is concluded that supplementation of ducklings ration with black seed plus ginger ameliorates productive and physiological treats.

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