



STUDY OF CARCASS CHARACTERISTICS IN PIGEONS ADMINISTRATION FISH OIL

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ABSTRACT

This experiment was carried out at the animal house, college of veterinary medicine / university of Kufa to find out the cholesterol concentration of blood and meat, dressing percentage with and without giblets, and relative weight of the heart, liver, and gizzard of pigeons administrated orally 1 ml/fish oil/bird daily. Thirty adult male pigeons (Zigil breed) were randomly divided into two equal treated groups as the following: T1/ birds without fish oil supplementation (control group) while T2/ birds were supplemented daily with 1 ml fish oil during the experimental period (30th days). Blood samples were collected at three times (0, 15th and 30th days respectively) during the experimental period. Serum cholesterol analysis of three times and Carcass parameters were measured at the end of the experiment. The results indicate that fish oil has a significant improving in blood cholesterol, relative weight of liver and meat cholesterol. In conclusion, using fish oil during breeding period may cause a significant decrement of blood and meat cholesterol to give healthy meat with best effect on performance.

KEYWORDS: Pigeons, Omega-3, Newcastle disease, Antibody titer, Total proteins.

INTRODUCTION

Fish oil is a good source of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) which are called omega-3 fatty acids (n-3) (Stulnig, 2003). These fatty acids are essential because the body cannot synthesize them endogenously on the other hand the commercial diets are usually low in omega-3 (Al-Daraji *et al.*, 2011), so it must be provided in the diet (Woods *et al.*, 2005; Serhan, 2005). Food components are playing an important role in preventing diseases by modulating physiological systems (Dentali, 2002). In fact, consumption of omega-3 is associated with reducing the risk of cardiovascular diseases, and cancers (Mozaffarian *et al.*, 2005; Theodoratou *et al.*, 2007). Today, consumers are no longer satisfied with this concept; nutritional value, quality, extended shelf life and convenience are expected in meat products. Meat industry develops to produce healthier meat characterize by reduction of fat content, modification of fatty acid composition, incorporation of functional ingredients, reduction of calories, nitrites and cholesterol content (Jimenez-Colmenero *et al.*, 2001). In veterinary medicine there was a wide range of studies and researches on omega-3. Sahib (2013); Jameel and Sahib (2014) found supplementation of omega-3 led to improve blood lipid profile, carcass measures and health status in broilers. Thus, this study was conducted to investigate the effect of daily use of fish oil on blood and meat cholesterol, dressing percentage with and without giblets, and relative weight of the heart, liver, gizzard and fat.

MATERIALS & METHODS

This experiment was carried out at College of Veterinary Medicine/ University of Kufa during the period from 26,

Oct. to 26, Nov. (2014). Thirty adult male pigeons (Zigil breed) were bought from a local marketing were divided randomly and equally into two treated groups of 15 birds of each treated group as follows: the first group (T1) without fish oil administration (control group) and the second group (T2) with oral administrated 1 ml/omega-3/bird daily. Feed and water were provided *ad libitum*. Blood samples from all birds were collected from the bronchial vein in a test tube without anticoagulant at three times (0, 15th and 30th days respectively) during the experimental period. The blood was allowed to clot and centrifuged for 10 minutes at 3000 rpm to obtain on serum which stored in a deep freeze (-20C°) (Al-Daraji *et al.*, 2008). At the end of the experiment, all birds were weighted individually using digital balance and then slaughtered. The head, feather and viscera were removed. Each carcass was weighted to get the dressing percentage while, heart, liver, gizzard and fat were separated from other organs and tissues and then weighted (Al-Fayadh and Naji, 1989). Breast meat without skin and bone was separated from the carcass and placed in a plastic container and stored in deep freeze (-20C°) until analysis. Lipid of meat was extracted (Gaduri, 2001). Cholesterol concentration of serum and meat were laboratory analyzed by using of diagnostic kit and spectrophotometer. Data generated from the research were carried out in a complete randomized design (Steel and Torrie, 1980). These data were subjected to ANOVA according to the general linear model procedure of SAS (2001). The significant differences among means were determined by L.S.D by p 0.05 level of significance.



FIGURE 5: carcass of pigeon



FIGURE 6: liver, gizzard and heart



FIGURE 7: meat sample

RESULTS & DISCUSSION

Blood cholesterol test

The results of daily supplementing fish oil influence on serum cholesterol of pigeons at time 0, 15th and 30th days are presented in Table (1). No significant difference was found in serum cholesterol concentration at time 0 and 15th days in T2 (fish oil) as compared with T1 (control group). But, at time 30th days a significant (p 0.05) decline of cholesterol was found in T2 (fish oil) which recorded

(210.17mg/dl) as compared with T1 (control group). The decrement of cholesterol concentration of serum may be related with continuous oral administration of fish oil. Fish oil rapid absorption by the intestine of the bird and can help lower the absorption saturated fatty acids (contain cholesterol) (Moran, 1989). Also, essential fatty acids in this oil inhibit the liver enzyme (hydroxyl methylglutaryl-CoA reductase) (Lenhninger, 1982). The present results agree with Sahib (2013).

TABLE 1: serum cholesterol (mg/dl). Mean ± Standard error

Treatment \ Time	Zero (Day)	After 15 (Days)	After 30 (Days)
T1 (Control)	243.17±6.36 a	251±11.63 a	255.33±9.05 b
T2 (Fish oil)	230.50±7.47 a	265.83±11.42 a	210.17±5.85 a

Small different letters in the same column denoted that significant differences between treatments at a level (p 0.05).

Dressing percentage without or with giblets and relative weights of edible giblets

Data of daily supplementing fish oil on dressing percentage without or with giblets and relative weights of edible giblets at time 30th days are presented in Table (2), which indicated that no significant difference was found in T2 (fish oil) as compared with T1 (control group) among all parameters. While, liver percentage improved significantly (p 0.05) in T2 (fish oil) which is recorded (2.12 %) as compared with T1 (control group). The

increment of relative weight of liver may be related to a decrease of fatty liver and improve the energy availability also omega-3 protecting the cellular membranes of liver from peroxidation and inflammation by eicosinoids formation. Omega-3 PUFAs, such as EPA and DHA, have been associated with anti-inflammatory effects by interfering with eicosanoid production derived from archidonic acid (Calder, 1998). The current results agree with Jameel and Sahib (2014).

TABLE 2: carcass parts (%). Mean ± Standard error

Parameter \ Treatment	Dressing Without giblets	Dressing With giblets	Heart	Liver	Gizzard	Fat
T1 (Control)	72.50±1.08 a	77.61±1.16 a	1.49±0.18 a	1.32±0.08 b	2.28±0.25 a	1.30±0.30 a
T2 (Fish oil)	74.11±1.49 a	80.05±1.43 a	1.19±0.05 a	2.12±0.22 a	2.60±0.18 a	1.10±0.31 a

Small different letters in the same column denoted that significant differences between treatments at a level (p 0.05).

Meat cholesterol test

The effect of daily supplementing fish oil on meat cholesterol is presented in Table (3). Cholesterol concentration of meat was decrease significantly (p 0.05) in T2 (fish oil) which is recorded (119.40 mg/gm) as compared with T1 (control group). The decrement of meat

cholesterol may be related to continuous oral administration of fish oil. Also the decreased of blood cholesterol concentration effected on skeletal muscles cholesterol (Sahib, 2013). The result of this study agree with Al-Rubae (2011); Jameel and Sahib (2014).

TABLE 3: meat cholesterol (mg/gm) Mean \pm Standard error

Characteristic	Meat cholesterol
Treatment	
T1	137.80 \pm 3.99
(Control)	b
T2	119.40 \pm 3.23
(Fish oil)	a

Small different letters in the same column denoted that significant differences between treatments at a level (p 0.05).

CONCLUSION

It can be concluded from the results obtained in this study that fish oil has no significant effect on blood cholesterol before 15th days from administration also dressing percentage without or with giblets and relative weights of heart, gizzard and fat. Blood and meat cholesterol at 30th days from administration fish oil, relative weights of liver and meat cholesterol were improved significantly (p 0.05).

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