INTERNATIONAL JOURNAL OF ADVANCED BIOLOGICAL RESEARCH

www.scienceandnature.org

EFFECT OF USING SESAME OIL ON SOME PRODUCTIVE CHARACTERISTIC TO LAYER HENS (LOHMANN BROWN)

Al- Fadhli, M. K., Al-Ashaab, M. H., Al-Rubaee, S. H., Oleiwi, A. H. & Kamel, A. F.
Agricultural Researches Directorate/ Ministry of Science & Technology \ Iraq, Baghdad

ABSTRACT
This study was carried out at the poultry farm of Animal Resources Dept./College of Agriculture /University of Baghdad during the period from 22/10/2009 to 22/4/2010 to investigate the effect of adding different levels of Sesame oil to layer diets on some productive characteristic. 64 Lohmann laying hens 20 weeks age were used in this study, at the age of 22 weeks, the hens were individually weighed and randomly into four treatments with two replicates each (8 hens /replicate).The treatments were as follows: T1(control) no addition, T2,T 3and T4 included addition of 0.5, 0.75 and 1% sesame oil. The results revealed that the treatments included addition of 0.75 and 1% showed a significant improvement in all productive traits (egg production, food intake, food conversion and egg weight) during the different production periods.

KEY WORDS: Words**:** Sesame Oil, Productive Characteristic, Layer Hens.

INTRODUCTION

Lipids one of the important nutrient ingredients in animal nutrition due to its Carried of lipid soluble vitamine (A, D, E, K), minerals and its role as essential Fatty acid precursor, which animal body can't synthesize it, so it must be added to the diet. We can found these fatty acids in some animal oils like fish oil and vegetable oils like sesame oil, canuella oil, soya bean oil and corn oil. Omega fatty acids act an important role in human body in metabolism, cells membrane activity and enzymes activity (Ibeas *et al*.,1994) in addition to produce hormone like compounds which mediate physiological process like metabolism activity of muscles and nerves (Wassall and stillwed, 2003). Omega F.A had properties as Anti – inflammatory, Anti–heart disorders +Anti-Clotting (kris-Etherton, 2002). This fatty acid show significant decrease in sudden death due to heart –disorder in a patient with chronic heart diseases (Covirgton, 2004). Recently the public interest increased with fatty acids due to its role in protection of heart patients and with increasing of chemo therapy so many human believed that food additives more excepted for E.F.a.s benifites (Jehengir, 2004) the recent Researches mention that the Functions of Omega -3 and Omega -6 are Vary from each other as the high doses of essential F. a .O-6 had some risk on human health like increase tumors and increase spontaneous clot formation and raising the inflammatory responses while O-3 especially Eicosapenaenic acid (EPA) and Docosahexaenic acid (DHA) Which Find in Fish oil and vegetable oils , had contradiction harmful effects of Fatty acids O-6 (Burdge *et al*., 2002) the determination of exact dose of fatty acid based on: Type of Fat and its source, O 3/O 6, ratio in diet and metabolism of Fatty acids in body (Bezard *et al*.,1994).

MATERIALS &METHODS

This study was conducted in the field of the Department of Livestock at the college of Agriculture Baghdad University for the period from October 22,2009 until April 22,2010 for six months, during which the addition of different levels of sesame oil to the experimental diets of laying hens to study its effect on some productive performance Use at least 64 chickens laying hens (Lehmann Brown) age 20 weeks (at the beginning of sexual maturity), were obtained from a field of civil in Taji, and the birds had received care management and veterinary services. Were housed in cages, steel mesh and the age of 22 weeks (beginning of the experiment) they were weighted individually and then distributed randomly to four treatments 2 replicates / treatment contains eight hens per replicate during those two weeks hens were fed on the diet contains all the nutrients required and as recommended by the manufacturer for this strain (Table 1). (This diet compared to consider as control diets) treatment under study included the following: Treatments first control diet of sesames oil-free, second, third and fourth 0.5, 0.75 and 1% of the oil, sesames and sequentially. All diets were symmetrical in their content of energy and protein, all the conditions were provided for breeding of laying hens in the Hall of lighting (16 h light :8 h darkness/ day) and ventilation to the optimal temperature, not to fall below 17 °c during the day and throughout the duration of the experiment , and ranged humidity between 50-60%. The parameters that study were (%) Hen Day production, egg weight (g), feed intake (g/hen/day), feed conversion ratio (g feed/g/egg). Used a global test applied to the design of a random full(CRD)were compared between the moral test averages Duncan (Duncan, 1955) polynomial and use the program SAS(SAS, 2001) in statistical analysis.

TABLE 1: The constitutive and chemical composition % for diets on the experiment of hen layer during study period

ingredient	The Treatments			
	T1	T2	T3	T4
Yellow com	45	44.5	44.25	44
Wheat	22	22	22	22
Bean meal soya	17	17	17	17
Protein concentrated	8	8	8	8
Sesame oil	0	0.5	0.75	1
Lime stone	7.7	7.7	7.7	7.7
Na Cl	0.3	0.3	0.3	0.3
(1)chemical composition %				
Crud protein	17.56	17.55	17.53	17.51
Metabolism energy	2745	2755	2762	2768
Fiber	3.18	3.18	3.18	3.18
Ca	3.76	3.76	3.76	3.76
Lysine	0.81	0.80	0.80	0.80
Methnine+systine	0.64	0.64	0.64	0.64
phosphor	0.62	0.62	0.62	0.62

(1) Chemical composition for diets constitutive according as in NRC 1994

RESULTS & DISCUSSION

Table (2) show statistical differences (P<0.05) in Hen Day % (H.D. %) among all treatments during the production periods, where at T3 and T4 show increasing in H.D. % on T2 and control at age of 34 week (mid experiment) until the end of experiment (46 week) while T2 show significant improvement in this trait in the second half of experiment (46 week) and had no significant differences with T3 and T4 while control had the lowest H.D. % all experiment. The T3 and T4 showed a significant increasing in egg weight % in compared with T1 and T2 the improving in H.D. % in S.O treatments may be due to high level of unsaturated fatty acids like lenoleic oil and oleic oil (Wathes *et al*., 2007). Leese and Ferguson (2006) mention that the unsaturated Fatty acids have role in different mechanisms in Reproductive activities, so it's used as source of energy during development and maturing ovulatory Follicles even in Fetal development . The addition of Lenolic acid to the diet had an important role in egg growth and differentiation of cells in addition to its regulatory role in meiosis division in the germy follicles and protected it from damage (kim *et al*., 2001). Bibly *et al*. (2006) noted that adding unsaturated fatty acids to diet had an effect on folliculogensis in terms of the increase in total number and size of mature follicles in pre-ovulatory follicle stage. The effecting of unsaturated fatty acids on growth and development of follicles from direct effect on steroid hormones synthesis in ovary that by increasing enzymes activity which have role in sexual steroids synthesis by changing transcription factors activity which controlled the genetic expression of these enzymes and then increase its activity in cell which leads to increase activity of steroid biosynthesis in the gonads (Wathes *et al*., 2007) .

Food intake (table 2) show significant differences (p <0.05) among treatments, whereas, T4 had the lower data then T3and T2 while T1 (control) had the higher data in food intake in first stage (34 week) and continue until the end of experiment, the treatments show an improvement in food conversion specially in T4 and respected by T3 and T2 while T1 (control) had the higher feed conversion data. These data may be due to effect of S.O. on increasing appetite and improving food conversion by increase intestinal intents and that may be due to include S.O. on essential fatty acids and that in conferming table 2 which show significant decrease (p < 0.05) in average of food intake for T3 and T4 in compared with T1 at 34 and 46 week.

TABLE 2: Effect of different levels of sesame oil addition to the diet of Brown lohman in some preductional traits during production periods

Treatment	34 week age				46 week age			
	H.D %	Egg weight	Food intake	Food conversion	H.D %	Egg weight	Food intake	Food conversion
T1 0% S.O.	91.80 c	61.17 c	110.05 a	1.95 a	90.88 c	62.54 c	112.15 a	1.90 a
T2 0.5% S.O.	92.54 b	61.73 b	108.96 b	1.90 ab	91.76 b	63.34 b	110.75 b	1.90 a
T3 0.75% S.O.	92.87 a	62.98 a	108.15 b	1.85 b	92.06 ab	63.93 a	110.29 b	1.87 b
T4 1 % S.O.	93.19 a	63.02 a	107.31 c	1.82 c	92.79 a	64.21 c	109.61 c	1.83 c

The different for small letter within one column mean presence significant difference between different treatments at probably level (p<0.05)

REFERENCES

Bezard, J., Blond, J.P., Bernard, A. & Clouet, P. (1994) The metabolism and availability of essential fatty acids in animal and human tissues, Reprod. Nutr. Dev., 34:539-568.

Bilby, T. R., Block, J. and Amaral, B.C.(2006) Effect of dietary unsaturated fatty acids on oocyte quality and follicular development in lacting dairy cows in summer, J. Dairy Sci. 89:3891-3903 .

Covington M.B. (2004) Omega-3 fatty acids. American family physician 70:133-140.

Das, U.N. Biological significance of essential fatty acids (2006) J Assoc physicians' lndia. 54:309-319.

Duncan, B. D.(1955) Multiplerange and multiple f-test Biometric,11:1-42.

Kim, J. Y., Kinoshita, M. Oshnishi, M. and Fukui, Y. (2001) Lipid and fatty acid analysis of fresh and frozen – thawed immature and in vitro matured borine oocytes. Reproduction.122:131-138.

Jehangir , N. D., David, E.N. and Andrew, D.F. (2004) Omega-3 fatty acids and cardiovascular disease MJ ; 328:30-35.

Lee.S., Gura, K.M. and puder, M. (2007) Omega-3 fatty acids and liver disease. Hepatology. 45:841-845.

National Research Council (NRC) (1994)Nutrient requirement of poulty. 9th rev. ed. National aca demy press, Washington, DC.

SAS, lnstitute (2001) SAS users guide: statistics version 6th ed., SASinstitte inc., cary, ne.

Stillwell, W. &Wassall, S. R. (2003) Docosahexaenoic acid: membrane properties of a unique fatty acid. Chem phys Lipids. 126 (1):1-27.

Wathes, D.C., Robert D., Abayasekara, E. and Aitken, R. J. (2007) Poulyunsaturated fatty acids in Male and femaie reproduction. Biol. Reprod. 77; 190-201.