International Journal of Advanced Research in Biological Sciences
ISSN: 2348-8069
www.ijarbs.com
DOI: 10.22192/ijarbs Coden: IJARQG(USA) Volume 3, Issue 12 - 2016

Research Article

DOI: http://dx.doi.org/10.22192/ijarbs.2016.03.12.001

Effects of adding crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on chemical composition parameters of main, carcasses parts

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Abstract

This study was conducted at the private poultry farm under name (ZIAR) farm. The present experiment was aimed to investigate the effect of adding Individual and combining crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* A total number of 200 one day old straight run broiler Ross-308 hybrid chicks were distributed to four dietary treatments each of treatment has 5 replicate each of replicate has 10chicks, the control group (C) without any supplement sources of any type seeds, treatment one (T1) adding 0.50% of crushed *Nigella sativa* seeds, treatment two (T2) adding 0.50% of *Thymus vulgaris*, treatment three (T3) adding mixing level 0.25%:0.25% of both T1+T2. Data of chemical analysis obtained by process analysis of all parts meat in three laboratory, Shaqlawa technical institute, by cooperation of medical university laboratory and external laboratory (al-Ghazaly laboratory) for cholesterol parameters. The results observed significant ($P \leq 0.01$) among all treatment with C but insignificant ($P \geq 0.01$) between T1 and T2, T3 observed higher value for all percentage of moisture, protein and Ash parameters while T1 and T2 showed higher value compared with C but less value than T3 for most characterized of breast and thigh muscles chemical organic parameters. C treatment showed higher value in fat and cholesterol for most main carcasses parts.

Keywords: *Nigella sativa*, *Thymus vulgaris*, Ross-308 and main carcasses broiler parts.

Introduction

A technical advance in the poultry industry has been accompanied by a significant exacerbated in the size of disease problems as refuge.

Most workers in this field towards the use of chemical drugs, including antibiotics and growth promoters Life which results in accumulation in the tissues of birds and their members bad influence on the health of consumers of eggs and meat from those poultry, and in order to avoid the adverse effects of these drugs attracted attention in recent times to use some medicinal plants or extracts in the poultry industry after that it has been scientifically proven effective in treating the effects of many of the diseases that infect humans and animals including birds (Alshahat, 2000). Most poultry diseases can reduce the spread and assist in the treatment by using herbs and medicinal plants (Khadary et al.19960), and this may contribute to reducing the use of drugs and chemicals, and by this way we can spare human dangers of drug residues of chemical deposited in poultry products, due to the lack of research add that dealt with black bean and thyme to the diets of broiler conducted. This study aimed to determine the effects Unilateral and solidarity to add

crushed seeds of black bean and thyme leaves to broiler diets on chemical compassion parameters of main, secondary carcasses and edible parts.

Materials and Methods

The experiment was conducted by cooperation of one private farm in closed Erbil city with 200 birds, one day old straight run broiler chicks (Ross-308) for 35 days period of breeding diet. The chicks were randomly divided into 4 equal treatments groups (C, T1, T2 and T3) each having 50 chicks. Each treatment was subjected to 5 equal replications of 10 chicks each. The diets were formulated with commonly available feed ingredients is shown in Table 1 for starter and Table 2 for grower and finisher diet. The dietary treatments were C (control diet) without any additive; T1, T2 and T3 were supplemented with herbs of 0.50 *Nigella sativa*, 0.50 *Thymus vulgaris* and 0.25 *Nigella sativa*, +0.25 Thymus valgaris respectively. Dry mash feed was supplied on *adlibitum* basis. Fresh clean drinking water was made at all the times. Adequate sanitary measures were taken during the experimental period. The birds were housed in cages of 120cm×76cm.

Feeding

The owner of farm depended on two period feeding, starter and grower with same finisher style as in table 1 and 2.

Table 1. The ingredients and chemical composition of starter (1-10 days) diet

control diet Ingredients	Amount in the diet (%)
Maize	51.30
Soybean meal	42.00
Soybean oil	4.00
Salt	0.25
Di- Calcium Phosphate	0.50
1Calcium premix	1.00
Vitamin-Mineral premix	0.75
DL-Methionine	0.15
Choline Chloride 60%	0.05
Chemical composition Amount (%)	
Dry matter	85.00
Crude protein	23.21
Crude fibre	5.88
Ether extract	1.76
Nitrogen free extract	48.41
Ash	6.96
ME(kcal/kg DM)	` * 3241.22

**Calculated according to (NRC, 1994)*

Table 2. The ingredients and chemical composition of grower and finisher (11-35 days) diet

control diet Ingredients	Amount in the diet (%)
Maize	37.53
Soybean meal	41.00
Soybean oil	18.70
Salt	0.25
Di- Calcium Phosphate	0.50
1Calcium premix	1.00
Vitamin-Mineral premix	0.75
DL-Methionine	0.22
Choline Chloride 60%	0.05
Chemical composition Amount (%)	
Dry matter	**85.6**
Crude protein	19.42
Crude fibre	6.67
Ether extract	1.75
Nitrogen free extract	48.22
Ash	6.74
ME(kcal/kg DM)	*2450.54

**Calculated according to (NRC,1994)*

[1] active substances per kilogram of premix: vitamin A 2 500 000 IU; vitamin E 50 000 mg; vitamin D3 800 000 IU; niacin 12 000 mg; d-pantothenic acid 3 000 mg; riboflavin 1 800 mg; pyridoxine 1200 mg; thiamine 600 mg; menadione 800 mg; ascorbic acid 50000 mg; folic acid 400 mg; biotin 40 mg; vitamin B12 10.0 mg; choline 100000 mg; betaine 50000 mg; Mn 20 000 mg; Zn 16 000 mg; Fe 14 000 mg; Cu 2 400 mg; Co 80 mg; I 200 mg; Se 50 mg

Processes of chemical analysis for *Nigella sativa* and *Thymus vulgaris* done in medical university laboratory and estimated compared with measuring of AOAC. (1990) clear in table 3.

Table 3. Chemicals composition of *Nigella sativa* and Thymus *vulgaris*

Organic compound %	*Nigella sativa*	*Thymus vulgaris*
Moisture	5.58	6.34
Ash	1.88	2.79
Crude protein	21.16	13.86
Ether extract	31.97	4.08
Crude fiber	10.92	25.36
Soluble carbohydrate	22.94	46.55
Voltaic fatty acids	5.28	1.02
Total	100	100

Preparing samples for parts meat chemical analysis

1. Determination of total nitrogen (Crude protein)

The determination of nitrogen in feeds, meat and liver was performed with the macro-Kjeldahl method according to application of AOAC (1990) standard method for block digestion and steam distillation and standard method for Kjeldahl method by using Leco NS, nitrogen analyzer (Al- Aswaad, 2000).

2. Determination of crude fat

Total fat content of meat and liver was determined by application of standard method. The brief procedure of crude fat analysis was depended on extracted with petroleum ether by Soxhlet apparatus application of (Al- Aswaad, 2000).

3. Total cholesterol

Total cholesterol by using Gas Liquid Chromatography (GLC) method (SYRBO Company for determination cholesterol procedures, it was conducted in Mizda Private medical Laboratory for meat cholesterol estimation and Eliza Laboratory for veterinary performance.

Statistical analysis

For the statistical design and data analyses, complete random design of experiment with 4 treatments was determined. Data in all experiments were subjected to ANOVA procedures appropriate for a completely randomized design and the significance of differences between the means estimated using Duncan test (Duncan's new multiple range test). Probability level of chemical parameters which P<0.01 was considered. Values in percentage were subjected to transformation. All statistical analyses were performed using the software SPSS 17.5 for Windows® (SPSS Inc., Chicago, IL).

Results and Discussion

Effects of adding crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on main parts carcass quality

Carcass composition can, to a large extent, be modified through diet choice (Leeson and summers, 2001).

Effects of adding herbs on chemical composition of breast and thigh muscle

Chicken meat is very important in the human food industry. The alimentary value of poultry meat is higher than that of large slaughter animals' meat, since it includes less cholesterol, collagen and total fat (Kroliczewska et al., 2008). Obtaining proper quality poultry meat depends not only on genetic potential but also on alimentary factors (Kang et al., 2001). Chemical compositions of main carcasses (breast and thigh) muscle for trial groups are present in table 4 (Breast and Thigh muscles).

Breast Muscle

Table 4 observed that significant (P≤0.01) for C among all treatments back to percentage of moisture, this result can be explain the reason effect of herbs increase of moisture versus less of percentage fat as we noted in column of % fat because of activate enzymatic for digestive feed (Ramakrishna et al. 2003) this result agree with results of Hernandez et al,. 2004).

The results also shown in table 4 harmonic effect of crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on percentage protein, while parentage of moisture increases compatible with increases of protein opposite of decreases % fat (Mohammed and Horniakova, 2012). Insignificant differences (P ≥0.01) among all treatment for percentage Ash this hit it off with nearly percentage of protein in meat (El- Faham, 1994).

Correspond of percentage fat the value of cholesterol was high in C and T3 , this attribute to no effect of crushed seeds of Nigela as known make less of cholesterol in blood for human and in meat (Samara et al. 1994). While may be as used combining not viewer effect of crushed seeds of Nigela in T3.

Table 4 : Mean ± S.D Effects of adding crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on main parts carcass organic content

Breast Muscle

Attribute / Treatments	Moisture %	Protein %	Fat %	Ash%	Cholesterol mg/100gram
C	69.85±0.54 a**	20.20± 0.52 a	8.77±1.03 b	1.13±0.01*	62.40±1.181 b
T1	72.65±0.80 b	22.86±0.74 b	3.18±1.51 a	1.26±0.11	41.40±6.98 a
T2	71.73±1.20 b	23.95±1.88 b	3.04±0.76 a	1.27±0.08	51.60±1.05 a
T3	72.96±1.00 b	23.26±1.03 b	2.42±0.53 a	1.30±0.13	62.40±2.30 b

***Insignificant (P≥0.01)**

****a,b means with different superscript within row are significantly different (P< 0.05) and values will increase from (a)to (b)value. Values mean ±S.D. Standard Deviation of slaughter 10 birds.**

Thigh Muscle

For amount moisture same significant as in breast observed in thigh, but for protein basic on differs muscle the value percentage of protein as seem higher in T2 then in T3 and T1 because of utilization of *Thymus vulgaris* whether individually or mixture with crushed seeds of *Nigella sativa* this back on content of them good percentage of protein as shown in table 5. The same effect of decrease of %fat opposite of moisture and protein as we explained in breast muscle, also for Ash insignificant differences (P≥0.01).

We must stop for cholesterol ,ok for control group never adding any type of herbs and normally increase of cholesterol because of high value of % fat but for T3 same for C group, so that's mean while mixture may be lead to less effect each other for decrease cholesterol, this results disagree with result of El-Bagir, et al,.(2006).

Table 5: Mean ± S.D Effects of adding crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on percentage of protein

Thigh Muscle

Attribute / Treatments	Moisture %	Protein %	Fat %	Ash%	Cholesterol mg/100gram
C	68.536± 0.96 a**	20.25±0.93 a	7.02±1.28 b	1.15±0.01*	72.40±3.20 b
T1	71.71± 2.05 b	21.53±1.49 ab	3.26±1.88 a	1.21±0.08	498.80±14.48 a
T2	72.38±1.05 b	23.43±0.51 c	4.30±1.30 a	1.23±0.13	56.00±12.18 ab
T3	73.19 ±0.77 b	23.17±0.57 bc	4.67±0.57 ab	1.14±0.06	69.50±2.57 b

***Insignificant (P≥0.01)**

****a,b means with different superscript within row are significantly different (P< 0.05) and values will increase from (a)to (b)value. Values mean ±S.D. Slandered Deviation of slaughter 10 birds.**

Conclusion

Utilization of herbs in general for broiler nutrition improve for performance and quality of organic content in meat, but sometimes when mixing two type lead to decrees effect of them neither used nor as individual.

Acknowledgments

After thanks for Lord God we present our grateful for owner poultry field (ZIAR) (Mrs Areef) for permission to do our experiment in his farm. Also we give our thanks for Shaqlawa technical institute and laboratory medical university.

References

1. Alshahat,Naser Abo Zaid ,2000 , plant and medical herbs, Arabic dar for publishing, ed 2, Egypt. Cario.
2. Khadary, R. M.; M. H. El- Azzawy and I. R. Hamdy; 1996. Effect of *Nigella sativa* on egg production, hatchability percentage and some biochemical values in laying hens with reference to fertility in cockerels. 7th Sci. Cong.,Fac. Vet. Med., Assuit Univ., 17-19 Nov., Ass. Egypt, 91-106.
3. National Research Council (NRC); 1994. Nutrient Requirement of poultry. 9th ed. National Academy press, Washington.
4. Association of Official Analytical Chemists (AOAC); 1990. Official methods of analysis. 15th edn .published by the AOAC, Washington D.C.USA.
5. AL–ASWAAD, Maged, Basheir. 2000. The Laboratory Examination in meats technology E2 Ministry of high education and scientific research, Books house service for print and publisher .Mosul University, Iraq.2000.125.P. ISBN. 02-648512-10.
6. SPSS INC. ARMONK, NY - 02 Oct 2009: IBM (NYSE: IBM) announced it has completed its acquisition of SPSS Inc. (Nasdaq: SPSS), a publicly-held company headquartered. In *Chicago. IBM announced a definitive agreement to acquire SPSS on July 28, 2009.*
7. LESSON, S– Summers, J. 2001. *Scott's Nutrition of the Chicken.* 4th Ed. 4th ed. Ontario: University Books; 2001. 620p.

8. KROLICZEWSKA, B. – Jankowska, P. – Zawadzki, W. –Oszmianski, J. 2004. Performance and selected blood parameters of broiler chickens fed diets with skullcap (*Scutellaria baicalensis* Georgi) root. In: *Journal of Animal and Feed Science*, vol. 13. 2004, p. 35–38. (Cited by Kroliczewska et al., 2008).
9. KANG, K. – Cherian, G. –Sim, J. 2001. Dietary palm oil alters the lipid stability of polyunsaturated fatty acid-modified poultry products. In *Journal of Poultry Science*, vol. 80, 2001, p. 228-234.
10. Ramakrishna, R.R.; K. Platel and K. Srinivasan; 2003. In Vitro influence of species and spice – active principles on digestive enzymes of rat pancreas and small intestine. Nahrung., 47:408 - 412.
11. Hernandez, F.; J. Madrid; V. Garcia; J. Orengo and M. D. Megias; 2004.Influence of two plant extracts on broiler performance, digestibility, and digestive organ size. Dep. Of Anim. Prod. Univ. of Murcia, Campusde Espinardo 30071, Murica, Spain.
12. Mohammed, Hassan.A, and Horniakova. Erika, 2012, Utilization of Different Lipids in Broiler's (Ross-308) Feeding. PhD dissertation. Faculty of agrobiologic and food resources. Slovak university of agriculture in Nitra.
13. El- Faham, S. Y; 1994. Comparative studies on chemical composition of Nigella Sativa seeds and its cake (defatted meal). J. Agric. Sci. Mansoura. University, 19 (7): 2283- 2289.
14. Samara, M.H.; K.R,Robbins and O.S. Simth ; 1996. Interaction of feeding time and temperature and their relationship to performance of the broiler breeder hen . Poultry Sci., 75:34-41.
15. El- Bagir, N.; A. Hama; R. M. Hamed ; A. G. Abd El- Rahim and A. C. Beynen; 2006. Lipid composition of egg yolk and serum in laying hens fed diets containing black cumin (Nigella sativa). International J. Poultry Sci., 5(6): 574- 578.

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Quick Response Code	Subject: Agricultural Sciences
DOI:10.22192/ijarbs.2016.03.12.001	

How to cite this article:
Hassan.A.Mohammed. (2016). Effects of adding crushed seeds of *Nigella sativa* and leaves of *Thymus vulgaris* on chemical composition parameters of main, carcasses parts. Int. J. Adv. Res. Biol. Sci. 3(12): 1-6.
DOI: http://dx.doi.org/10.22192/ijarbs.2016.03.12.001