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EFFECT OF USING DIFFERENT LEVELS OF GINGER (*ZINGIBER OFFICINALE*) POWDER ON PRODUCTION PERFORMANCE AND SOME METABOLISM PARAMETERS OF PARTRIDGE (*ALECTORIS CHUKAR*)

Rashid Hassan Hamid Al-Dalawi[1], Sameerah Hussein amen[1], Hussein saber Qader[2] and Shaho Shaker Sharif[1]

[1]Department of Animal Production, College of Agriculture, University of Kirkuk, Iraq
[1]Technical institute in Kirkuk, Iraq
Samira.husin@yahoo.com

Abstract

This study conducted to determine the effects of adding different level of ginger powder on some production performance and metabolism characteristics of partridge. 100 partridge used 14wk age, experiment continue for 6wks, birds were randomly attributed to 5 treatments by 4 replicate (20 birds each). The treatments were T1 diet without any addition (control) T2 diet adding of ginger 2gm/ kg diet, T3 diet adding of ginger 4gm/ kg diet, T4 diet adding of ginger 6gm/ kg diet and T5 diet adding of ginger 4gm/ kg diet. The results showed that the adding ginger to diet have a significant effect on gain weight for T2 andT4 compared with other treatments and control (T1), feed intake, feed conversion should that T1 had a highest value. For (protein, energy, methionine, lysine) consumption results showed T2 better traits compared with all treatments for protein, energy, methionine, lysine) conversion results showed T1.T3 and T5.

Keywords: Ginger, partridge, production performance and metabolism parameters

Introduction

Zingiber rhizomes powder used as spicy in food and as plant medicine for a lot disease especially in south Asia and Middle East (Shanoon and Jassim, 2012). The important components gingerols, shagols, zingerone and gingerols (Saeid *et al*., 2012) in additives for bird used to help high performance (Ahmed *et al*., 2000). Active principles of the plant chemicals in certain parts of plant (Zhang& Zheng, 2002), it help body to defiance against free radicals for it anti- oxidation ability (Amr & Hamza, 2006), help digestion by stimulating endogenous enzymes (Shanoon *et al*., 2019). The most import parts in ginger gingerol and gingerdiol. (Eltazi, 2014) found that no changes in feed intake in broiler ,repot that the ginger have a significant effect on metabolism parameters of broiler feed different levels of ginger were (Barreto *et al.*, 2008) found that there were a significant effect for adding ginger extract on broiler metabolism parameters. (Shanoon *et al*., 2012) showed that ginger oil had very significant effects on broiler performance parameters.

Materials and Methods

Used of 100 partridge in 12wk age and experiment continue for 17wks age (for 6wks) in gages (25×30×30) cm, randomly attributed for five treatments

- T1 as control given diet without any additive
- T2 feed standard ration with 2gm ginger/kg feed.
- T3 feed standard ration with 4gm ginger/kg feed.
- T4 feed standard ration with 6gm ginger/kg feed.
- T5 feed standard ration with 8gm ginger/kg feed.

The ration shown in table 1 (NRC, 1994). After 5wks of feeding experiment ration the live body weight, gain weight, feed intake and feed conversion as production performance parameters and (protein, energy, methionine, lysine) consumption and (protein, energy, methionine, lysine) conversion as metabolism parameters were calculated. Experiment was design as complete random design CRD and data tested by Duncan Multiple range and F-test (Duncan, 1955) and used of SAS program (SAS, 2003) to analyses data.

Table 1 : Ingredients of diet used in experiment

Ingredients	%	Energy Kcal/kg	Protein %
Wheat	68.00	2121.60	7.82
Oil	1.50	135.00	0.00
wheat bran	16.00	232.00	2.48
soybean meal 48%	12.70	284.48	6.10
Lysine	0.01	0.00	0.00
Methionine	0.20	0.00	0.00
Limestone	1.50	0.00	0.00
Sodium bicarbonate	0.00	0.00	0.00
Salt	0.10	0.00	0.00
Total	100.0	2773	16.40
Standard formula	100	2700	16.0%

Results and Discussion

The results from table 2showed that there were no different between treatments and control in body weight (gm) but we saw that there were a significant different ($P<0.05$) in gain weight for all traits compared with control. Control group (T1) occur a significant different for feed intake, T1and T5 had significant different ($P<0.05$) in feed conversion compared with T2, T3 and T4.

From table 3 we saw that protein consumption for T2 have the highest value compared with other treatments and control and same think for Energy, Methionine and Lysine Consumption, while the other treatments (T3, T4 andT5) have not significant different compared with control group for this parameters.

Table 4 show that T1 have a significant different for Protein conversion compared with T2 and T4, and have no difference with T3 nd T5. Energy conversion occur the same way in significant effects for T1, T3 and T5 on T2 and T4. For methionine and lysine conversion.

Table 2 : Effects of adding ginger on diet on production performance for traits of partridge

Treatment	Body Weight (gm)	Gain Weight (gm)	Feed Intake (gm)	Feed Conversion
T1	B 439.75±9.77	B 66.75±4.02	A 295.08±0.71	A 4.19±0.26
T2	A 450.42±10.83	A 96.50±8.58	B 270.83±1.94	B 3.1352±0.26
T3	A 443.58±2.07	B 70.75±2.49	B 273.66±3.04	B A 3.88±0.14
T4	A 450.42±5.25	B 83.25±8.32	B 271.50±2.21	B 3.35±0.32
T5	A 458.83±7.82	B 77.75±3.19	B 275.58±0.67	B A 3.56±0.14

Letter a, b and c refer to different between treatments.

Table 3 : Effects of adding ginger in diet on (Protein, Energy, Methionine and Lysine) Consumption of partridge

Treatment	Protein consumption	Energy consumption kk/kg	Methionine Consumption	Lysine Consumption
T1	B 44.33±0.11	B 748.12±1.92	B 1.16±0.002	B 1.922±0.004
T2	A 47.33±0.31	A 798.75±5.25	A 1.24±0.008	A 2.053±0.013
T3	B 43.78±0.48	B 738.90±8.22	B 1.149±0.012	B 1.899±0.021
T4	B 43.44±0.35	B 733.05±5.97	B 1.140±0.009	B 1.884±0.015
T5	B 44.09±0.10	B 744.07±1.81	B 1.157±0.009	B 1.912±0.004

Letter a, b and c refer to different between treatments.

Table 4 : Effects of adding ginger in diet on (Protein, Energy, Methionine and Lysine) conversion of partridge

Treatment	Protein conversion	Energy conversion	Methionine conversion	Lysine conversion
T1	A 0.67±0.041	A 11.33±0.707	A 0.017±.0010	A 0.029±.0018
T2	B 0.50±0.041	B 8.46±0.705	B 0.013±.0010	B 0.0217±.0018
T3	BA 0.62±0.022	BA 10.48±0.386	BA 0.016±.0006	BA 0.026±.0009
T4	B 0.54±0.051	B 9.06±0.864	B 0.014±.0013	B 0.023±.0022
T5	BA 0.57±0.023	BA 9.61±0.400	BA 0.015±.0006	BA 0.025±.0010

Letter a, b and c refer to different between treatments.

Discussion

From the results of tables 2,3 and 4 adding Ginger for partridge ration give in effects on Digestive systems in birds (Al-Shuwaili *et al.*, 2015). The present research on ginger shown good results regards to weight like seen in table 2. (Shanoon, 2011) and (Jorsaraei, 2000) refer to that medicine plant present as a strong therapeutic activity. Spices and herbs content many health helper for birds (Dorman & Deans, 2000 & Brugalli, 2003). Ginger is widely used as herbal remedy (Chrubasik, 2005). (Emadi, 2006) have a research of Effect of turmeric rhizome powder (0.05, 0.1, 0.15 and 0.2%) on laying hens a diet based on wheat and soybean were investigated that it have a god effects on metabolism parameters and body weight. (Oleforuh-Okoleh, 2014) showed that using the 0.5% powdered ginger rhizome significantly decreased energy conversion in broilers that are consistent with these results. (Omage *et al*., 2007) in a study the effect of scrap substitute powdered ginger as an energy source in the diet of a rabbit. The use of ginger significantly decreased methionine and lysine conversion in all treatments compared with the control group (Shanoon, 2011) which does correspond with the results obtained in this study. (Moorthy *et al*., 2009) have significantly increased in body weight and explain that Important compound in ginger rhizomes, gingerol content a 10- gingerol which have a very effect on digestive secretion and help digestion (Shanoon *et al.*, 2019).

Conclusion

From the results of table 2,3 and 4 we showed that ginger have significant effects and benefits to body and have in different effect in every part of body. From our results we conclusion that we can adding ginger to partridge diet without any fair.

References

Shanoon, A.K. and Mahdi, S.J. (2012). Effects of *Thymus vulgaris* and *Zingiber officinale* Aqueous on Semen Parameters, Testes Weight and Histology Measurements of Broiler Breeder Male. International Journal of Poultry Science, 11(9): 594-598.

Ahmed, R.S.; Seth, V. and Banerjee, B.D. (2000). Influence of dietary ginger (*Zingiber officinales* Rosc) on antioxidant defense system in rat: comparison with ascorbic acid. In. J. Exp. Biol., 38: 604-606.

Al-Shuwaili, M.A.; Ibrahim, E.I. and Naqi Al-Bayati, M.T. (2015) Effect of dietary herbal plants supplement in turkey diet on performance and some blood biochemical parameters. Glob. J. Biosci. Biotechnol., 4(2): 153-157.

Amr, A. and Hamza, A.E.A. (2006). Effects of Roselle and Ginger on cisplatin-induced reproductive toxicity in rats. Asian J. Androl., 8: 607-612.

Barreto, M.S.R., Menten, J.F.M.; Racanicci, A.M.C.; Pereira, P.W.Z. and Rizzo, P.V. (2008). Plant extracts used as growth promoters in broilers. Revista Brasileira de Ciência Avicola. 10(2)

Brugalli, I. (2003). Alimentacao alternativa: An utilizacao de fitoterapicos ou nutraceuticos como moduladores da imunidade e desempenho animal. Anais do Simposio sobre Manejo e Nutricao de Aves e Suínos; Campinas, Sao Paulo. Brasil. Campinas: CBNA, pp: 167-182.

Chrubasik, S.; Pittler, M.H. and Roufogalis, B.D. (2005) *Zingiberis rhizoma*: A comprehensive review on the ginger effect and efficacy profiles. Phytomedicine, 12: 684 701.

Dorman, H.J.D. and Deans, S.G. (2000). Antimicrobial Martins, A.P., L. Salgueiro, M.J. Goncalves, A.P. da agents from plants: Antibacterial activity of plant volatile oils. J. Appl. Microbiol., 88: 308-316.

Duncan, D.B. (1955). Multiple range and F-test. Biometrics, 11: 1-42.

Eltazi, M.A. (2014). Response of broiler chicks to diets containing different mixture levels of garlic and ginger powder as natural feed additives. Int. J. Pharm. Res. Allied Sci., 3(4): 27-35.

Emadi, M.; Kermanshahi, H. and Maroufyan, E. (2006). Effect of Varying Levels of Turmeric Rhizome Powder on Some Blood Parameters of Broiler Chickens Fed Corn-Soybean Meal Based Diets.

Saeid, J.M.; Shanoon, A.K. and Marbut, M.M. (2012). Effects of *Zingiber officinale* Aqueous Extract on Semen Characteristic and Some Blood Plasma, Semen Plasma Parameters in the Broilers Breeder Male. International Journal of Poultry Science 10(8): 629-633.

Jorsaraei, S.G.; Yousefnia, Y.R.; Zainalzadeh, M.; Sekiwa, A.A.; Kubota, K. and Kobayashi (2000). Isolation Moghadamnia, A.A. Beiky and M.R. Damavandi, 2008. The effects of methanolic extracts of ginger (*Zingiber officinale*) on human sperm parameters; an *in vitro* study. Pak. J. Biol. Sci., 11: 1723-1727.

Moorthy, M.; Ravi, S.; Ra-vikumar, M.; Viswanathan, K. and Edwin, S.C. (2009). Ginger, Pep-per and Curry Leaf Power as feed additives in broiler diet . Inter. Jour. Of Poult. Sci. 8(8): 779-78.

NRC (1994). National research Council, Nutrient Requirements of poultry. 9th Rev. Edn., National Academy Press, Washington, DC.

Oleforuh-Okoleh, V.U.; Chukwu, G.C. and Adeolu, A.I. (2014). Effect of ground ginger and garlic on the growth performance, carcass quality and economics of production of broiler chickens. Glob. J. Biosci. Biotechnol., 3(3): 225-229.

Omage, J.J.; Onimisi, P.A.; Adegbite, E.K. and Agunbiade, M.O. (2007). The Effect of Ginger (*Zingiber officinale* Roscoe) Waste Meal on Growth Performance, Carcass Characteristics, Serum Lipid and Serum Cholesterol Profiles of Rabbit. Pakistan Journal of Nutrition 6(4): 359-362.

SAS Institute (1992). SAS User's Guide: Statistics. SAS Institute. Inc., Cary, NC. Tollba, A.A., 2003.

Shanoon, A.K. (2011). Effect of Ginger *Zingiber officinale* and Thyme *Thymus vulgaris* on Reproductive and Reproduction performance of broiler breeder chickens Ross, 308. (THESIS), College of Agriculture University of Tikrit.

Shanoon, A.Q.; Osama, A.L. and Mohammed, A.M. (2019). Effects of Date Palm Pollen on Productive Performance, Eggs Quality and some blood parameters in Japanese quail. J. plant archives Vol. 19 No.1.

Zhang, Y.Y. and Zheng, G.M. (2002). Artificial insemination of Cabot's Tragopan. J. Beijing Normal Univ. Nat. Sci. Ed.