



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2018; 6(4): 247-248

© 2018 JEZS

Received: 13-05-2018

Accepted: 14-06-2018

Nileshkumar Pagrut

Associate Professor, Department of Veterinary Pathology, Arawali Veterinary College, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Subha Ganguly

Associate Professor, Department of Veterinary Microbiology, Arawali Veterinary College, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Shashi Tekam

Assistant Professor, Department of Veterinary Anatomy, Mahatma Jyotiba Fule College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Piyusha Bhainsare

Assistant Professor, Department of Veterinary Medicine Mahatma Jyotiba Fule College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Correspondence**Nileshkumar Pagrut**

Associate Professor, Department of Veterinary Pathology, Arawali Veterinary College, Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan, India

Effect of supplementation of garlic extract on the productive performance of broiler chicks

Nileshkumar Pagrut, Subha Ganguly, Shashi Tekam and Piyusha Bhainsare

Abstract

A study was conducted to assess the effect of garlic supplementation in diets of broiler as a replacement antibiotic on productive performance of the broilers. Thirty one day old broiler chicks were separated into 3 groups reared for a period of 6 weeks. The groups were assigned to receive the treatment diet as follows: Group 3 served as control and was fed ration without any supplementation (basal diet); whereas group 2 and 1 were fed diet contained supplementary raw garlic powder at 0.5 and 1.0 Kg/ton diet respectively. The birds (in group B) using ration supplemented with 0.5kg/ton garlic gained the highest live weight (g) among the treated groups and the best-feed conversion ratio although they consumed the same food ($p < 0.05$). It is therefore concluded that dietary inclusion of garlic in the rations may be used for economical and efficient production of broilers.

Keywords: Broiler chick, garlic, performance, production, supplement

Introduction

The domestication process of wild jungle fowl marked the start of selective breeding of poultry. Over the millennia many different breeds were developed and by the end of the nineteenth century AD many breeds were in existence. Also the fast growing nature of broilers and their short generation interval has been associated over the years with the use of antibiotic growth promoters in animal feeds in order to improve the quality of the product. The birds raised with these feed additives achieved good performance^[4]. To improve the chicken healthiness and in order to fulfil consumer expectations in relation to food quality, poultry producers more and more commonly apply natural feeding supplements, mainly herbs with the assessment of positive effects of herbal feed supplements on broiler performance.^[6] Garlic (*Allium sativum*) is well known as a spice and herbal medicine for the prevention and treatment of a variety of diseases. The major active ingredients of garlic are allicin, ajoene, S-allyl cysteine. Garlic has been found to demonstrate antimicrobial activity^[1], lower serum and liver cholesterol^[7] and improve productive performance of broiler chicks^[9]. Some studies, however, suggested that commercial garlic oil, garlic powder and commercially available garlic extract may be hypocholesterolemic^[3]. In addition to its antimicrobial activities, garlic has been shown to increase feed palatability and thus feed intake. The objective of this study was to investigate the effect of garlic supplementation in diets of broiler on productive performance.

Materials and Methods

This study was conducted on thirty one-day old broiler reared in same space, temperature, relative humidity, ventilation and light. A raw garlic powder at 0.5 and 1.0 kg/ton diet was fed to Group-1 and Group 2 respectively while Group-3 was maintained as control. The data collected were utilized to calculate feed consumption, body weight gain and FCR. The data thus collected were subjected to the analysis of variance (ANOVA) technique in completely randomized design. The differences in the means were compared by the Duncan's Multiple Range^[8].

Results and Discussion

The use of garlic 500mg/kg in Table I showed that powdered garlic at 0.5% level may be incorporated as a growth promoter in the ration of broiler birds. Addition of garlic improved the weight gain of the broilers in this study.

These results were also reported by Ahmad ^[2] in which he stated that higher weight gain in broilers fed rations supplemented with garlic. The improvement in weight gain of the birds using garlic in their rations may probably be due to

the fact that allicin (an antibiotic substance found in garlic), inhibits growth of intestinal bacteria such as *S. aureus* and *E. coli* and inhibit aflatoxins producing fungi.

Table 1. Performance of broiler chickens fed diets containing supplementary garlic

Parameters	Treatments		
Supplementary garlic (mg/kg diet)	Group 1 (1000 mg)	Group 2 (500 mg)	Group 3 (control)
Total weight gain (g/bird)	1882.88±19.60 ^c	1977.36±22.80 ^b	1844.36±28.59 ^a
Total feed intake (g/bird)	4020.38±205.8 ^a	3912.16±210.0 ^a	4179.18±149.0 ^a
Feed conversion ratio (FCR)	2.1 ± 0.16 ^c	1.9 ± 0.16 ^b	2.3 ± 0.15 ^a

Resultantly, when the load of these bacteria in the intestine is low, birds may absorb more nutrients, thus leading to the improvement in weight gain of the birds using rations supplemented with *alum sativum*. This study clarified that, the birds fed rations supplemented with garlic utilized their feed more efficiently than those feed ration without addition of garlic. ^[5-10] Better feed conversion ratio of the broilers may be attributed to the antibacterial properties of this supplement, which resulted in better absorption of the nutrients present in the gut and finely leading to improvement in feed conversion ratio. ^[11-12]

Conclusion

Garlic supplementation to broiler chick diet improved weight gain and it was better at low level of supplementation (500 mg/kg diet) which may be useful for economical and efficient production of broilers.

References

1. Adibmoradi M, Navidshad B, Seifdavati J, Royan M. Effect of Dietary garlic meal on histological structure of small intestine in broiler chickens. *Poult. Sci.* 2006; 43:378-383.
2. Ahmad S. Comparative efficiency of garlic, turmeric and kalongi as growth promoter in broiler. M.Sc. (Hons.) Thesis, Department Poultry Sciences, University of Agriculture, Faisalabad, Pakistan, 2005.
3. Aporn Songsanga AS, Reawadee, USAO, Penpak PS, Sawanit C, Wunchai P. Effect of Garlic (*Allium sativum*) Supplementation in Diets of Broilers on Productive Performance, Meat Cholesterol and Sensory Quality. Tropentag, University of Hohenheim. Conference on International Research on Food Security, Natural Resource Management and Rural Development, 2008.
4. Donoghue DJ. Antibiotic residues in poultry tissues and eggs: Human health concerns? *Poult. Sci.* 2003; 82(4):618-621.
5. Fadlalla IMT, Mohammed BH, Bakhiet AO. Effect of feeding garlic on the performance and immunity of broilers. *Asian J Poult. Sci.* 2010; 4:182-189.
6. Onibi GE, Oluwatoyin E, Adebisi A, Fajemisin N, Ayode V, Adetun JI. Response of broiler chickens in terms of performance and meat quality to garlic (*Allium sativum*) supplementation. *African J Agric. Research.* 2009; 4(5):511-517.
7. Qureshi AA, Abuirmeileh N, Din ZZ, Elson CE, Burger WC. Inhibition of cholesterol and fatty acid biosynthesis in liver enzymes and chicken hepatocytes by polar fractions of garlic. *Lipids.* 1983; 18:343-348.
8. Tollaba A, Hassan MSH. Using some natural additive to improve physiological and productive performance of boiler chicks under high temperature conditions. 2. Black

cumin (*Nigella Sativa*) or garlic (*Allium sativum*). *Poult. Sci.* 2003; 23:327-340.

9. Duncan DB. Multiple range and multiple F tests. *Biometrics.* 1955; 11:1-42. doi:10.2307/3001478
10. Yin MC, Cheng WS. Antioxidant and antimicrobial effects of four garlic-derived organosulfur compounds in ground beef. *Meat Science.* 2003; 63(1):23-28.
11. Ganguly S. A Handbook on Traditional Medicinal Plants, Herbs and Fruits in Indian Agriculture and Forestry. 1st Ed., International E-Publication, 2013; ISBN 978-81-927544-5-1.
12. Ganguly S, Verma D. A Guide Book on Biological, Pharmaceutical and Chemical Implications of Various Indigenous Plants, Herbs and Fruits in Traditional and Alternative Medicine Practices (First Edition). Book Publication of Society of Education, Agra, India [ISO 9001:2008], 2015, ISBN 978-81-931748-2-1.
13. Ganguly S. Herbal Antioxidant Agents and its Pharmacological and Medicinal Properties. 1st Ed., Publisher: Research ma Gma Group, Solapur (Maharashtra), India, 2017. ISBN 978-1-365-90767-8.