Dietary Effect of Dried and Fermented Ginger (*Zingiber Officinale*) on Growth Performance, Meat Quality, Nutrient Digestibility and Cecal Microflora Concentration of Broiler

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Semester: January-June, 2020

A thesis submitted in partial of the requirements for the fulfillment of the degree of Master of Science in Animal and Poultry Nutrition

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June, 2020

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This is to certify that we have examined the above Master's thesis and have found that the thesis is complete and satisfactory in all respects and that all revisions required by the thesis examination committee have been made.

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Acknowledgement

I am indebted to Lord Krishna who enabled me to complete the research work and write up the dissertation successfully for the degree of Master of Science (MS) in Animal and Poultry Nutrition under the Department of Animal Science and Nutrition, Chattogram Veterinary and Animal Sciences University.

I am grateful to my supervisor **Dr. Jannatara Khatun**, Professor, Department of Animal Science and Nutrition, CVASU for her valuable supervision and guidance. It was really a great pleasure and amazing experience for me to work under her supervision. I would like to express my sincere gratitude to my co-supervisor **Dr. Md. Manirul Islam**, Professor, Department of Animal Science and Nutrition, CVASU for his continuous guidance through the whole research period. I understand it was impossible to complete the dissertation without their constructive supervision.

It's my pleasure to convey my profound gratitude to our Vice-Chancellor **Dr. Goutam Buddha Das**, Professor, Department of Animal Science and Nutrition, CVASU for his valuable advice, scholastic guidance, suggestions and inspiration. It is my privilege to acknowledge **Dr**. **Md. Emran Hossain**, Professor and Head, Department of Animal Science and Nutrition for their support, valuable advice and encouragement for the research work. I would like to thank **Kona Adhikary** and **Nasima Akter** for their valuable suggestion during the whole experimental period.

I sincerely thankful to all the staffs of the department of Animal Science and Nutrition and Poultry Research and Training Centre (PRTC), CVASU for their help during laboratory work. Last but not least, I express my deepest sense of gratitude to my beloved family members and my friends for their sacrifice, blessings and encouragement.

The Author

June, 2020

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List of Abbreviations

DG	-	Dried ginger
FG	-	Fermented ginger
BCRDV	-	Baby Chick Ranikhet Disease Vaccine
IBD		Infectious Bursal Disease
ADG	-	Average daily gain
ADFI	-	Average Daily Feed Intake
FCR	-	Feed conversion ratio
DM	-	Dry matter
CP	-	Crude protein
CF	-	Crude fibre
EE	-	Ether extract
NFE	-	Nitrogen free extract
CVASU	-	Chattogram Veterinary and Animal Sciences University
ME	-	Metabolizable energy
MRS	-	De Man, Rogosa and Sharpe agar
YM	-	Yeast Malta Agar
cfu	-	Colony forming unit
g	-	Gram
Kg	-	Kilogram
%	-	Percentage
et al.	-	And his associates
<	-	Less than
>	-	Greater than
LDL		Low-density lipoprotein
HDL		High-density lipoprotein

Abstract

The present experiment was conducted to determine the impact of dietary dried ginger (DG) and probiotic incorporated fermented ginger (FG) on growth performance, carcass characteristics, meat quality, serum lipid profile, nutrient digestibility, and cecal microflora concentration in broiler. One hundred and twenty unsexed day-old Cobb 500™ commercial broiler chicks were randomly allocated into five dietary treatments and each treatment had three replications with 8 birds per replication in a completely randomized design for a five weeks trial. The five dietary groups were: G_0 (control group, basal diet), G_1 (basal diet+0.5% dried ginger), G_2 (basal diet+1% dried ginger), G_3 (basal diet+0.5% fermented ginger) and G_4 (basal diet+1% fermented ginger). The results demonstrated, substantially ($p<0.05$) reduced overall FCR at the G_1 fed birds and significanlty lowest ($P<0.05$) final weight and weight gain in G_4 fed birds. During 3rd week, there was significantly ($p<0.05$) increased average daily gain (ADG) in all the supplemented birds excluding G4. The lowest average daily feed intake (ADFI) was observed at G4 birds at the age of 3rd week. Significantly higher ($p<0.05$) dressed weight, breast meat weight and spleen weight were found in all the dietary supplemented birds compared with control. Dietary treatments did not affect proximate components and p^H of the breast meat. Drip loss percentage of the meat was found to be significantly ($p<0.05$) reduced in DG and FG supplemented birds. The lowest ($p<0.05$) cooking loss percentage observed at G_1 fed birds. Meat thiobarbituric acid reactive substances (TBARS) significantly ($p<0.05$) suppressed in DG and FG supplemented birds than control during 10th day of meat storage. Significantly ($p<0.05$) serum LDL levels were declined at supplemented birds and serum HDL level inclined significantly ($p<0.05$) in G_2, G_4 group but declined in G_3 group. Apparent ileal digestibility (AID) for DM, CP, EE and Ash were significantly improved ($p<0.05$) in all the dietary supplemented birds. The *Lactobacilli* populations in cecal contents significantly higher ($p<0.05$) whereas lower *E. coli* was found in dietary treated birds. Highest profit achieved from G_1 fed birds. It is concluded that, supplementation of 0.5% DG and 0.5% FG had beneficial effect on growth performance and meat quality with healthier gut environment of broiler.

Keywords: Ginger, broiler, probiotic, digestibility, microflora, lipid profile.