PHYSIOLOGICAL STUDIES ON BROILER CHICKS UNDER HEAT STRESS CONDITIONS

By

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B.Sc. Agric. Sc. (Poultry Production), Zagazig University, 2004
M.Sc. Agric.Sc. (Poultry Physiology), Ain Shams University, 2010

A thesis submitted in partial fulfillment
of
the requirements for the degree of

DOCTOR OF PHILOSOFY
in
Agricultural Science
(Poultry Physiology)

Department of Poultry Production
Faculty of Agriculture
Ain Shams University

2015

Approval Sheet

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ABSTRACT

Ahmed Gouda Abd-Allah Abd-Allah: Physiological Studies On Broiler Chicks Under Heat Stress Conditions. Unpublished Ph.D Thesis, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, 2015.

Two experiments were conducted to evaluate the effect of increasing dietary levels of organic chromium, organic selenium and Vitamin E and their interaction with early heat conditioning as means for alleviating the deleterious impacts of heat stress on broilers.

A total of 120 one day old commercial broiler chicks (Cobb) were used in the first experiment they were divided into four groups with six replications, each of five chicks. The first group was the control group; the other groups were fed the basal diet supplemented with organic Chromium (0.8 mg/kg diet), organic selenium (0.3 mg/kg diet) and vitamin E (200 IU/kg diet) for 2nd, 3rd and 4th groups respectively.

Results showed that increasing dietary levels of organic chromium, organic selenium and Vitamin E especially Vitamin E supplementation could improve the productive performance enhance blood parameters, total antibody titer against to Newcastle disease Virus **(NDV),** Insulin-like Growth factor -1 (IGF-1), antioxidant status, Heat shock protein 70 (HSP 70) and Carcass characteristics in heat stressed broiler chicks reared during the summer conditions.

The second experiment was conducted to study the possible benefits from the interaction between early age heat conditioning (5 d 40±1°C for 24h) and dietary supplements of the first experiment. A total of 240 one day old commercial broiler chicks (Cobb) were divided into two groups of 120 birds, each group was subdivided into 4 sub-groups of 30 birds, the first sub-group was the control group, the other sub-groups were fed the basal diet supplemented with (200

IU/kg diet vitamin E and 0.8 mg/kg diet organic Chromium), (200 IU/kg diet vitamin E and 0.3 mg/kg diet organic selenium) and (200 IU/kg diet vitamin E, 0.8 mg/kg diet organic Chromium and 0.3 mg/kg diet organic selenium), for 2nd, 3rd and 4th sub-groups respectively. At 5-d of age the first group was exposed to 40±1°C for 24h **(Heat conditioning, HC)** while the second one was maintained under the normal brooding temperature (32±1°C) **(Non heat conditioning, N.H.C),** At 42-d of age all groups were exposed to 41±1°C for 1h**.**

Results showed that early age heat conditioning of broiler chicks and dietary supplements with (200 IU/kg diet vitamin E and 0.8 mg/kg diet organic Chromium), (200 IU/kg diet vitamin E and 0.3 mg/kg diet organic selenium) and (200 IU/kg diet vitamin E, 0.8 mg/kg diet organic Chromium and 0.3 mg/kg diet organic selenium) could improve the productive performance enhance blood parameters, total antibody titer against to Newcastle disease Virus **(NDV),** Insulin-like Growth factor -1 (IGF-1), antioxidant status, heat shock protein 70 (HSP 70) and carcass characteristics in heat stressed broiler chicks reared during the summer conditions.

It is suggested that early age heat conditioning accompanied with (Vit.E, Cr or Se) may be practically effective in enhancing the general performance of broiler chicks under heat stress conditions.

Key words: Broiler, performance, Blood, heat conditioning, Vitamin E, selenium, Chromium, Heat shock proteins and antioxidant status.

ACKNOWLEDGMENTS

First of all, thanks are due to our merciful "**ALLAH**" for continuous help through out my study and my life.

I would like to express my deep personal gratitude and sincere appreciation to **Prof. Dr. Ibrahim El- Wardany El- Sayed,** Professor of Poultry Physiology, Department of Poultry Production, Faculty of Agriculture, Ain Shams University, for his supervision, suggesting the problem, valuable advices and help in revising the manuscript to be in its final form.

I am extremely grateful to **Prof. Dr. Alaa El- Dien Abd El-Salam Hemid,** Professor of Poultry Nutrition, Department of Poultry Production, Faculty of Agriculture, Ain Shams University**,** for supervision, providing facilities, valuable advices and kind help during the course of the study.

My deep gratitude is extended to **Prof. Dr. Mosaad Mohammed Ali El- Monairy,** Professor of Poultry Nutrition, Department of Animal Production, National Research Center, for suggesting the problem, his close and continuous supervision, providing the facilities, revising the manuscript and support during this work.

I wish to express my deepest thanks to **Prof. Dr. Eman Farag El-Daly,** Professor of Poultry Physiology, Department of Animal Production, National Research Center, for her supervision valuable advices**,** co- operation, encouragement and constant interest throughout this work.

I remain grateful to **Prof. Dr. Ahmed Ragheb Shemeis,** Professor of Animal Breeding, Department of Animal Production, Faculty of Agriculture, Ain Shams University**,** for his valuable advices and continuous help in the statistical analysis of data.

I would like to express my deep thanks to all the staff members and poultry physiology colleagues in the Department of Poultry Production, Faculty of Agriculture, Ain Shams University, and the Department of Animal Production, National Research Center for their support and kind help.

To the ever-revolving face of the "Poultry Physiology Group in Ain Shams University and Animal Production in National Research Center", it has been a privilege and honor to work beside each of you over the years. I truly appreciate all of the hard work and time that you have put forth to help me with my research. Without you, I would have never got all of this research done. I wish each of you the very best in life.

I would like to express a special word of thanks to my beloved **mother**, my **brothers and sisters**. Words are not enough to express my deepest gratitude for you all, thank you for believing in my abilities, thank you for your concern and love. You are always in my heart, I love you so much.

To my daughter, **Aseel**, thank you for giving me the hope all the time just by looking or playing with you. You brought joy to our life. You are one piece of my heart, I love you.

Finally, I wish to convey my special gratitude to **my wife**, who stood by me through the happiness and tears. I cannot express the depth of my love and appreciation for your faith and belief in me. Your unconditional love and understanding never faltered and was my inspiration as I faced the many challenges involved with this experience.

To each of the above, I extend my deepest appreciation.

Ahmed Gouda Abd-Allah

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