EVALUATION OF LEGUMES HAY WITH ENZYMES IN GROWING RABBIT DIETS

By

DOAA MOHAMED SABER MOHAMED

B.Sc. Agric. Sci. (Poultry Production), Fac. Agric., Cairo Univ., 2007
M.Sc. Agric. Sci. (Poulty Production), Fac. Agric., Cairo Univ., 2014

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

In

Agriculture Sciences

(Poultry Production)

Department of Animal Production
Faculty of Agriculture
Cairo University
EGYPT

2020

Format Reviewer **Vice Dean of Graduate studies**

APPROVAL SHEET

EVALUATION OF LEGUMES HAY WITH ENZYMES IN GROWING RABBIT DIETS

Ph.D. Thesis
In
Agric. Sci. (Poultry Production)

By

DOAA MOHAMED SABER MOHAMED

B.Sc. Agric. Sci. (Poultry Production), Fac. Agric., Cairo Univ., 2007
M.Sc. Agric. Sci. (Poulty Production), Fac. Agric., Cairo Univ., 2014

APPROVAL COMMITTEE

Dr. NESSRIN ABD EL SALAM SELIM ABD EL SALAM.....
Head Research of Poultry Nutrition, APRI, Agric. Res. Center

Dr. MAMDOUH OMAR ABD-ELSAMEE.....
Professor of Poultry Nutrition, Fac. Agric., Cairo University

Dr. MOHAMED AHMED FOUAD EL-MANYLAWI .....
Professor of Poultry Nutrition, Fac. Agric., Cairo University

Dr. MOHAMED REDA MOHAMED IBRAHIM .....
Professor of Poultry Nutrition, Fac. Agric., Cairo University

Date: / / 2020

SUPERVISION SHEET

EVALUATION OF LEGUMES HAY WITH ENZYMES IN GROWING RABBIT DIETS

Ph.D. Thesis
In
Agricultural Sci. (Poultry Production)

By

DOAA MOHAMED SABER MOHAMED

B.Sc. Agric. Sci. (Poultry Production), Fac. Agric., Cairo Univ., 2007
M.Sc. Agric. Sci. (Poulty Production), Fac. Agric., Cairo Univ., 2014

SUPERVISION COMMITTEE

Dr. MOHAMED REDA MOHAMED IBRAHIM
Professor of Poultry Nutrition, Fac. Agric., Cairo University

Dr. MOHAMED AHMED FOUAD EL-MANYLAWI
Professor of Poultry Nutrition, Fac. Agric., Cairo University

Name of Candidate: Doaa Mohamed Saber Mohamed **Degree:** Ph.D.
Title of Thesis: Evaluation of Legumes Hay with Enzymes in Growing Rabbit Diets.

Supervisors: Dr. Mohamed Reda Mohamed Ibrahim
Dr. Mohamed Ahmed Fouad El-Manylawi
Department: Animal Production **Branch:** Animal Nutrition
Approval: 1/ 2 /2020

ABSTRACT

The main target of this study was to evaluate the effect of inclusion some legume crops hay (Bean vines hay; BVH, pea vines hay; PVH and peanut vines hay; PNVH) as a partial substitution of clover hay (25 and 50%) without or with Galzym (0.5g/kg diet, as recommended by the manufacturer) in growing NZW rabbit diets on their growth performance, nutrients digestibility, nutritive value, cecum activity, carcass characteristics, plasma constituents and economic efficiency. Accordingly, a total of 14 experimental treatments were evaluated (3x2x2 + the control without Galzym and control with Galzym=14 treatments). The experimental pelleted diets were formulated to to be iso-nitrogenous (~ 17% CP), iso-caloric (~ 2600 Kcal DE/Kg diet) and to satisfy the nutrients requirements of growing rabbits according to Lebas (2004). Results of the experiment showed that rabbit groups fed BVH and PVH had best values ($P \leq 0.05$) of average daily body weight gain and feed conversion ratio than those fed PNVH diet. Feeding rabbits on tested legumes veins hay at 50% declined ($P \leq 0.05$) average daily feed intake as compared to the 25% level. There was significant ($P \leq 0.05$) increase in DM, OM, CP, CF, EE and NFE digestibility and nutritive value in form of TDN, DCP and DE with rabbit groups fed BVH and PVH diet compared to rabbits group fed PNVH. Digestion coefficients (DM% and NFE %) and nutritive values (TDN% and DE kcal/kg) were better significantly ($P \leq 0.05$) by substitution level 25% than 50% level. Feeding rabbits on PNVH resulted in significant lower content of total volatile fatty acids than those of BVH and PVH diets. Legumes veins hay source, levels of substitution and Galzym had no significant effect on all tested carcass characteristics. Values of total protein, albumin, Globulin, AST, ALT, creatinine, urea and cholesterol were found to be within the normal range of plasma blood analysis. All experimental diets improved economic efficiency in comparison to the control diet. According to circumstances of this experiment it could be recommended to replace clover hay with BVH, PVH and PNVH up to 50% without any adverse effects on rabbit performance.

Key words: Rabbits, Legumes hay, Enzymes, growth.

DEDICATION

Deep thanks are due to my Lovely Mother, my sisters and my Brother. All thanks to my husband Mostafa Maher Selim and my kids Ahmed and Aalaa for their patience and encouragement throughout the progress of this work and I can't find adequate words to express my feeling towards them.

Last but not least, I dedicate this work to soul of my dear father.

ACKNOWLEDGEMENT

First and above of all, I would like to express my great thanks to ***Allah****, for offering me the strength to fulfill this thesis. Praises and respects to the* ***Holy Prophet Muhammad*** *who is mercy for all worlds.*

I wish to thank ***Dr. Mohamed R. Ibrahim****, Professor of Poultry Nutrition, Faculty of Agriculture, Cairo University, for his kind help and appreciation to, indispensable advice and encouragement from the beginning of this work. Also, I wish to express my sincere thanks, deepest gratitude and appreciation to* ***Dr. Mohamed A.F. El-Manylawi,*** *Professor of Poultry Nutrition, Faculty of Agriculture, Cairo University, for his valuable supervision, careful revision and encouragement from the first step to the last during this thesis.*

Many thanks and gratitude are also extended to ***Dr. Marwa A. Suliman,*** *Senior Researcher of Poultry Nutrition, Utilization of By-product Research Department, Animal Production Research Institute, Agricultural Research Center, for grateful help and her role in collecting experimental materials and allowing me to work my some practical work in her lab. I owe my thanks to all the Professors and Staff members of Animal Production Department, Faculty of Agriculture, Cairo University, for their great support, and loving thanks for my friends for their support, concern, and valuable help.*

CONTENTS