EVALUATION OF POULTRY BY-PRODUCTS FOR FEEDING CHICKENS

by

SHABAN FATTOUH El-AFIFI

A thesis submitted in partial fulfillment

of

The requirements for the degree of

Master of Science

in

Agriculture

(Poultry Nutrition)

Department of poultry production

Faculty of Agriculture

Ain Shams University

1992

APPROVAL SHEET

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SHABAN FAttouh El-AFIFI

B.Sc.of Agric Sci.(poultry production), Ain Shams Univ 1986

This Thesis for M. Sc. degree has been Approved by:

Prof. Dr. A.A. Amer .....M....A.....Amer.....

Prof. of Poultry Nutrition El- Azhar Univ.

Prof. Dr. M.A. El-Zeiny .....M. El-Zeiny.....

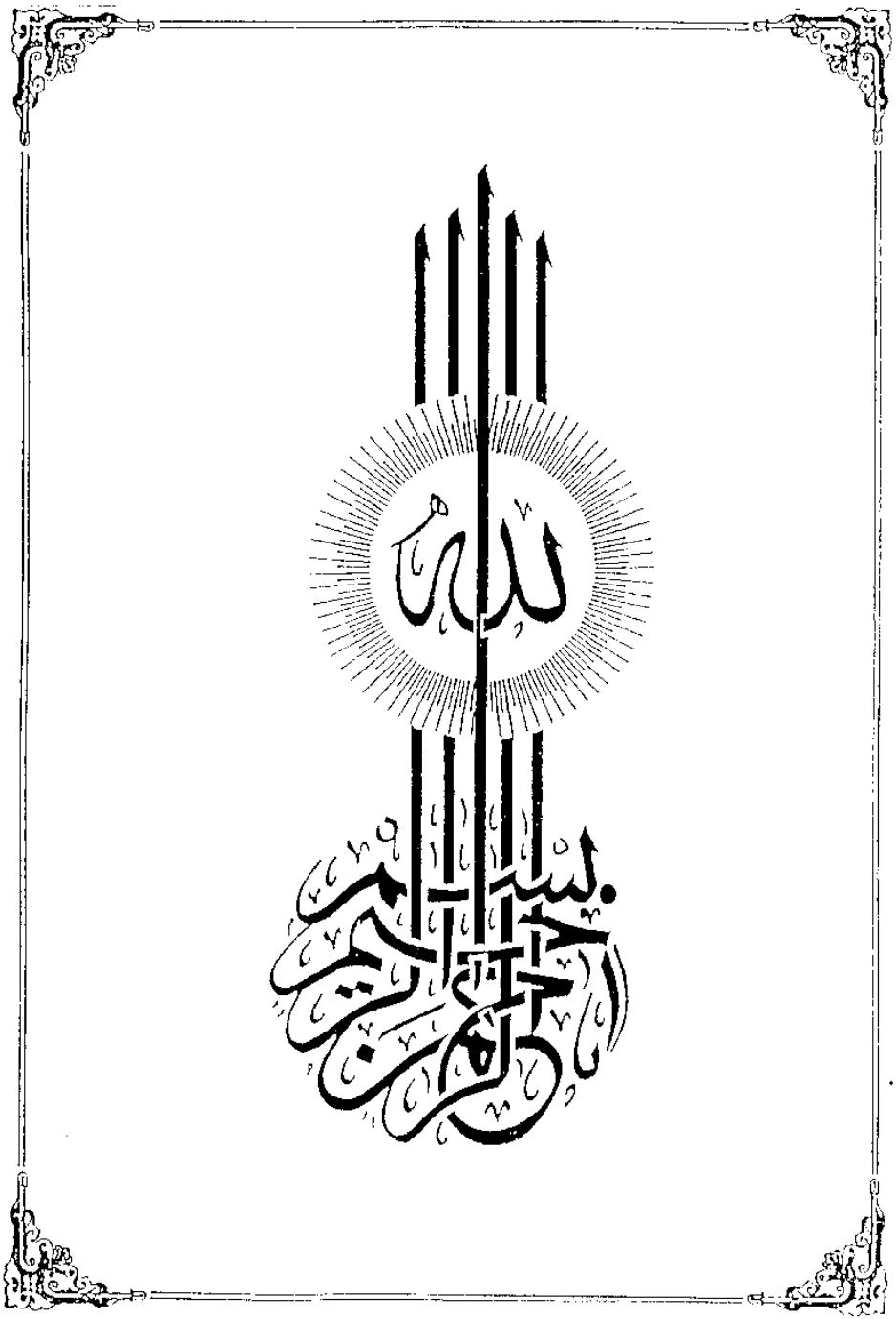
Prof. of Poultry Nutrition Ain Shams Univ.

Prof. Dr. M.A. Afifi .....

Prof. Emeritus of poultry Nutrition Ain Shams Univ.

(Supervisor)

Date of examination



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SHABAN FAttouh El-AFIFI

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Under the supervision of:

Prof. Dr. M. A. Afifi

professor Emeritus of poultry Nutrition

Dr. M. A. Shehata

Assistant professor of poultry Nutrition

ABSTRACT

This study was carried out to determine the nutritive value of poultry by-product meal (PBPM), which were locally produced by three poultry slaughterhouses, namely by MENCO which is located in KAFR SHUKR, Kalubia and two slaughterhouses belonging to United Company for Poultry Production which are located in KHANKA and HELIOPOLIS.

For this propose, the samples of PBPM were chemically analyzed and two biological experiments were carried out

i- The first experiment aimed to evaluate PBPM protein by the methods of protein efficiency ratio, Net protein

ratio and Net protein utilization, by using sixty Hubbard male broiler chicks.

ii. The second experiment studied the effect of using PBPM in practical rations on performance of broiler chicks, one hundred and thirty six Hubbard male broiler chicks were used from day-old up to 5 weeks of age.

There were differences in chemical composition among different sources of (PBPM); also between different batches of PBPM within same the slaughterhouse.

The quality of Heliopolis (PBPM) protein was significantly superior than KHanka (PBPM) which was slightely more than quality of MENCO PBPM protein.

The body weight gains and feed consumption for chicks fed diet contained fish meal were significantly higher than those fed diet with (PBPM) from different source. No significant differences were observed between various sources of PBPM in body weight gains or feed consumption, also no significant differences between treatments were observed in feed conversion ratio.

The conculsion derived from the results obtained were.

I. The differences in chemical composition among different source of PBPM might be due to nature of stock component which were used to produce each meal.

II. The differences between HELIOPOLIS and KHANAKA (PBPM) might be due to the processing procedures which were followed to produce each meal.

ACKNOWLEDGMENT

From heart, the auther express his great indebtedness, sincere appreciation and heartiness, to professor dr.M.A. Afifi, professor of poultry nutrition, Faculty of Agriculture, Ain Shams university, for his Kindness, direct supervision, suggesting the problem, reading and righten the manuscript and invaluable advice.

The auther also wishes to express his obligation gratitude to Dr.M.A shehata, Assistant professor of poultry nutrition, faculty of Agriculture, Ain Shams university, for his supervision through the course of the investigation and great advice.

The auther is extremely grateful and wishes to express his sincere appreciation to Dr.H.A. El-Alaily, Professor of poultry nutrition, Faculty of Agriculture, Ain Shams university, for lovingly providing some ingredients of experimental rations, invaluable advice and incourging me during the course of experiments.

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INTRODUCTION

Converting wastes of poultry dressing plants into non-conventional feedstuffs for livestock has received much consideration in developed countries since 1953. Manufacturing poultry by-product meals aimed to produce high quality protein source as well as providing sanitary disposal of poultry slaughter houses offals. At present time application of poultry by-product meals in poultry rations is common and the meals are not considered any more as non-conventional feedstuffs.

In Egypt there is a great demand for animal protein sources for poultry feeding. Much foreign currency is spent on importation of such feedstuffs. Therefore, encouraging production of local animal protein sources should be given high priority. Poultry by-product meal provides a good potential as animal protein source for poultry feeding. During the last twenty years some big integrated poultry projects were established which had poultry slaughterhouses with good rendering facilities of the offals.

According to El-Abbasey (1992), the broiler chicks slaughtered in the year 1987 amounted to 404000 ton of which 17% were slaughtered in poultry dressing plants. This amount yields approximately 8242 ton of poultry by-product meal taking into consideration that one ton of offals yields on the average 120 kg meal. This amount could be considerably increased if the slaughterhouses receive constant and regular supply of broilers and the capacity of

the plants is fully utilized.

Research on poultry by-product meals produced in Egypt is very lacking. It does not appear in the literature any information on the nutritive value of poultry by-product meals produced by three major poultry slaughterhouses namely by MENCO which is located in KAFR SHUKR, KALUBIA and two slaughterhouses belong to United company for poultry production which are located in KHANKA and HELIOPOLIS. Therefore, it was found necessary to carry out some studies on the nutritive value of these by-products to provide research workers and feed Compounders with additional information on chemical composition and protein quality of poultry by-product meal produced locally by these slaughterhouses. The objectives of the studies reported herein were

1- To determine the chemical composition of (PBPM) collected at different intervals.
2- To assess protein quality of various (PBPM) using different methods of protein evaluation.
3- To investigate the body performance of broiler chicks fed poultry by-products meals in practical diets.

CHAPTER I

REVIEW OF LITERATURE

1.1 Chemical composition of poultry by-product meal

1.1.1 Proximate analysis

Proximate analysis of the meal produced from the wastes of poultry slaughterhouses differ widely due to differences in the source of raw materials. Wisman at al (1958) reported that an offal meal sample composed of heads, feet and inedible viscera had 56.6% crude protein, 26.2% ether extract and 12.1% ash.

Keppenes and Reyntens (1969) analyzed poultry offal meal which consisted of blood, guts, gizzard, heads, feet and feather showed that they contained 67.3% crude protein and 14.5% fat.

Burgos et al (1974) showed that poultry by-product meal contained 72.2% protein when the feather were added to the wastes of poultry plants during cooking while it contained only 63.3% protein when feather were not added.

Bhargava and O'Niel (1975) analyzed 201 samples of poultry by-product hydrolyzed feather meal (PBPHFM) and the results obtained showed that, the meal contained on the average 70.3% protein, 12.3% ether extract, 9.2% ash, 2.7% crude fiber, 2.3% calcium and 1.4% phosphorus. However wide differences in nutrient contents among the samples were noted. The authors reported that protein ranged from 62.9 to 76.6% ether extract from 7.9% to 18.7%, ash from 6.8% to

15.2% and crude fiber from 0.8% to 5%.

Poultry by-product meal was analysed by numeros investigators and the results indicated that chemical composition of poultry by-product meal differed widely and the results indicated that poultry by-product meal had a protein which ranged from (53.7% to 69.7%), fat (13.4 to 26.8%) and ash from (3.5% to 16.7%). Analysis of various investigators are given in Table (1).

Table 1. Proximate analysis of poultry by-product meal by various investigators.

Authors / Items	D.M	C.P	E.E	C.F	Ash
Wisman et al 1958	93.6	54.55	14.6	0.35	16.95
Potter and fuller (1967)	92.2	63.3	21.3	-	7.4
Keppens and Reyntens (1969)	-	67.34	14.55	-	-
Mcnaughton et al (1977)	89.3	53.7	25.1	4.7	5.9
Pezzato et al (1979)	-	69.7	13.6	1.4	5.1
Mazanowska (1981)	-	60.6	10.15	-	15
Bielorai et al (1983)	93.1	58.2	16.3	-	16.7
Pokniak et al (1984)	-	65.68	22.6:26.8	-	4.5:5.8
El- Sherbiny et al (1985)	95.2	63.2	20.5	3.28	7.6
Pesti (1986)	94.5	61.2	13.4	-	16.1
Sibbald (1986)	-	66.0	14.6	4.8	3.5
Hubbe l (1987)	94.0	58.0	13.9	2.3	14

1.1.2. Amino acids composition

Patterens of amino acids of feed ingredients are very important since the amino acid and their availability rather than protein value are taken into consideration when formulating poultry rations. Also quality of proteins is determined on basis of their contents of amino acids. Thus many of studies were done to know the amino acids composition of poultry by-product meal as ingredient in poultry rations.