



UNIVERSITI PUTRA MALAYSIA

**EFFECT OF FISH MEAL SUPPLEMENTATION IN DIET ON GROWTH
PERFORMANCE AND CARCASS CHARACTERISTIC OF TURKEY**

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UNIVERSITI PUTRA MALAYSIA
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IN DIET ON GROWTH PERFORMANCE AND
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Certification

The project report attached here entitle:

Effect of Fish Meal Supplementation in Diet on Growth Performance and Carcass Characteristic of Turkey is prepared by Hashimah binti Hashim and submitted to the Faculty of Agriculture in partial fulfilment of the requirement of SHW 4999 (Final Year Project) for award of the degree of Bachelor of Agriculture (Animal Science) is hereby accepted.

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List of Abbreviation

DOP	day old poult
FCR	feed conversion ratio
NRC	national research council
CP	crude protein
CF	crude fibre
BW	body weight
s	Second



ABSTRACT

Turkey meat is gaining in importance in Malaysia with indications of increase in consumption of turkey with positive feedbacks in media such as newspaper, where sales of turkey were reported to be very good. There are more farms operating now compared to 5 years back. The type of turkey breeds used seems to be random-bred type of turkeys which can be called as ‘village type’ of turkey since they do not grow very big as commercial meat type turkey breed. Due to the unavailability of commercial feeds, most farmers are using commercial broiler chicken feed as substitute. Turkey needs diet of high protein compared to chicken. Poults need 28 % crude protein in the starter diet compared to 21 percent required by broiler chicken. The value-added diet is created by adding fish meal to provide a diet with the required protein levels. Two diets were used in the study. A commercial broiler diet and a value added diet. This research aim is to study effect of fishmeal in the diet on growth performance and carcass characteristic of turkey. The objectives of this study were to compare the effect of protein level in diets on the growth performance and carcass of turkey. Two diets were used; value added diet (diet1) and broiler starter (diet2). A total 80 poults were assigned to 8 cages randomly with four replicates each. The poults were given the treatment from day old poults. The age of turkey sample was from 70 days old. The average weight of turkey was 1.4kg. The FCR and turkey weekly weight show that there is no significant difference between diet 1 and diet 2. The live weight for both treatment diets was not significant

different even the diet 1 has slight higher live weight compare to diet 2. There was no significant different in dressing percentage and carcass weight from both diet. The carcass composition of the turkey was not significant different for gizzard, liver, wing, neck, drumstick, wing drumstick, back, breast and thigh for both diets. There was significant different ($P < 0.05$) in leg and the leg composition in turkey diet 2 is higher. Thigh composition has significant different ($P < 0.05$) at skin portion when compare diet 1 with diet 2, the rest part was not significant different. The composition of breast show that no significant different ($P > 0.05$). In conclusion, the growth performance and carcass composition of turkey is not affected with value added feed, but did not give negative effect because its increase the weight of turkey. The broiler feed does not need to change to value added feed because there is no effect in growth performance.

ABSTRAK

Daging ayam belanda semakin penting di Malaysia dengan tanda-tanda peningkatan dalam penggunaan ayam belanda dengan maklum balas positif dalam media seperti surat khabar, di mana jualan ayam belanda dilaporkan menjadi sangat baik . Terdapat lebih banyak ladang yang beroperasi sekarang berbanding 5 tahun yang lalu . Jenis baka ayam belanda yang digunakan seolah-olah jenis baka campuran dari pelbagai baka ayam belanda yang boleh memanggil sebagai ' Jenis kampung ' ayam belanda kerana mereka tidak berkembang sangat besar daging komersial jenis baka ayam belanda . Oleh kerana ketiadaan makanan komersial , kebanyakan petani menggunakan makanan ayam daging komersial sebagai pengganti . ayam belanda perlu diet protein tinggi berbanding ayam. Anak ayam belanda perlu 28 % protein mentah dalam diet permulaan berbanding dengan 21 peratus yang diperlukan oleh ayam daging . Diet nilai tambah dicipta dengan menambah hasil ikan yangh tidak digunakan untuk menyediakan pemakanan yang dengan tahap protein yang diperlukan . Dua diet telah digunakan dalam kajian ini . Diet ayam daging komersial dan diet nilai tambah . Tujuan penyelidikan ini adalah untuk mengkaji kesan bahan berkaitan ikan dalam diet pada prestasi pertumbuhan dan ciri bangkai ayam belanda .

Objektif kajian ini adalah untuk membandingkan kesan tahap protein dalam diet prestasi pertumbuhan dan bangkai ayam belanda . Dua diet telah digunakan ; nilai ditambah diet (diet1) dan permulaan ayam daging (diet2) . Sebanyak 80 poults telah ditugaskan untuk 8 sangkar secara rawak dengan empat replika setiap . The anak ayam belanda telah memberikan rawatan yang dari hari anak burung lama . Umur sampel ayam belanda adalah dari 70 hari. Berat purata ayam belanda adalah 1.4kg . The FCR dan ayam belanda berat badan mingguan menunjukkan bahawa

tidak terdapat perbezaan yang signifikan di antara diet 1 dan diet 2. berat hidup untuk kedua-dua diet rawatan tidak ketara berbeza walaupun diet 1 telah sedikit berat hidup yang lebih tinggi berbanding dengan diet 2. Tidak ada perbezaan yang signifikan dalam peratusan persalinan dan berat bangkai dari kedua-dua diet. Komposisi ayam belanda yang disembelih tidak perbezaan yang signifikan bagi hempedal , hati , sayap , leher , paha ayam , sayap paha ayam , belakang, dada dan paha untuk kedua-dua diet . Terdapat perbezaan yang signifikan ($P < 0.05$) di kaki dan kaki komposisi dalam ayam belanda diet 2 adalah lebih tinggi . Komposisi paha mempunyai signifikan yang berbeza ($P < 0.05$) di bahagian kulit apabila membandingkan diet 1 dengan diet 2, bahagian selebihnya tidak ketara berbeza . Komposisi payudara menunjukkan bahawa tiada perbezaan yang signifikan ($P > 0.05$). Kesimpulannya , prestasi pertumbuhan dan bangkai komposisi ayam belanda tidak terjejas dengan makanan tambah nilai , tetapi tidak memberi kesan negatif kerana peningkatan yang berat ayam belanda . Suapan daging tidak perlu mengubah makanan kepada nilai tambah kerana tidak ada kesan dalam prestasi pertumbuhan .

CHAPTER 1

1.1 INTRODUCTION

The demand for turkey meat in Malaysia is on the rise. There are more backyard and medium size turkey operations now compared to the past decade. Marketing of turkey through internet flourished since the past five years. Turkeys provide good return from sale of poult and meat (DVS 2012). Turkey meat is available as whole turkey carcass or as downstream products. A successful company, One Piru Best Resource Sdn Bhd for example, produces downstream products such as sate, kebab and burger (Usahawan Ayam Piru, 2013). Although the development progress is good, the bulk of turkey meat production in Malaysia is still small. It appears that the much cheaper and high availability broiler chicken meat do not affect the demand for turkey meat. Social media influence and the dynamic changes in eating preference of a progressive Malaysian society are important elements that support active commercialization effort.

Turkey meat is favorable because of its lean nature. The protein, fats and energy value of turkey meat are 24%, 6.6%, 162 Calories per 100 gm of meat. Mineral like potassium, calcium, magnesium, iron, selenium, zinc and sodium are present, and it is also rich in essential amino acids and vitamins like niacin, vitamin B6 and B12. The meat is also rich in unsaturated fatty acids and essential fatty acids and low in cholesterol (Majdood Ahmed, *et al.*, 2003). Turkey meat is consumed

concurrent with cultural and religious practices such thanksgiving and Christmas celebrations.

There is no sale of commercial diet for turkey in Malaysia. What is available is chicken feed and duck feed. For meat production, broiler starter feed is the only option for a turkey farmer. However, the nutrient composition in a broiler starter diet cannot fulfill the requirement of turkey poults. Turkey poults require 28 percent protein, where else a broiler starter feed could only provide a maximum of 23 percent protein(Lee, 1914). The nutrient quality like amino acid digestibility is important parameter to decide the protein quality that came from source of animal or plant (Santhi, *et al.*, 2011). The nutrient requirement like amino acid can be obtained from the source of protein. The protein sources available for the poultry are from animal (fish meal) and from the plant (soy bean meal). Turkey rear under good condition of hygiene and fed optimal diet has good effect of the performance and carcass traits (Mikulski, *et al.*, 2008).

Most backyard farmer use chicken feed for their turkeys. Feed cost contributes to about 70% of production cost. Some farmers are creative and innovative and created new feed mixture that can fulfill nutrient requirement for turkey. Firman (2001) reported that the real reason to look at newer formulation method is strictly an issue of money. A farmer willing to innovate the feed when they have enough capital to invest. Effect of using chicken feed supplemented with another ingredient, to improve the nutrient content, on the performance of turkey is an interesting area to be studied.

1.2 OBJECTIVE

The general objective of this study is to determine effect of dietary fish meal supplementation, to meet the NRC protein requirement level, on the performance and carcass characteristics of turkey.

Specific objectives

- To compare the effect of dietary fish supplementation to meet NRC protein level, on the growth performance of turkey
- To study the effect of dietary fish supplementation to meet NRC protein level, on the carcass characteristics of turkey

1.3 HYPOTHESIS

Additional protein through fish meal supplementation will give positive effect on the growth performance and carcass characteristics of local turkey.

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