



UNIVERSITI PUTRA MALAYSIA

**EFFECT OF DIETARY *MORINGA OLEIFERA* LEAF MEAL
SUPPLEMENTATION ON EGG PRODUCTION AND QUALITY IN
VILLAGE CHICKENS**

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VILLAGE CHICKENS**

BY

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A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfillment of the requirement of SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science)

Faculty of Agriculture
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CERTIFICATION

This project entitled “Effect of Dietary *Moringa oleifera* Leaf Meal Supplementation on Egg Production and Quality in Village Chickens” was prepared by Nursalwani Binti Ahmad and report submitted to the Faculty of Agriculture in partial fulfillment of the requirement of SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science).

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LIST OF ABBREVIATIONS

MOLM	<i>Moringa oleifera</i> leaf meal
%	Percentage
°C	Degree Celcius
ANOVA	Analysis of Variance
DM	Dry Matter
CP	Crude Protein
CF	Crude Fiber
EE	Ether Extract
Ca	Calcium
P	Phosphorus
g	Gram
ml	Milliliter
USDA	United State Department of Agriculture
T1	Treatment 1 (0% of MOLM)
T2	Treatment 2 (2.5% of MOLM)
T3	Treatment 3 (5% of MOLM)
T4	Treatment 4 (7.5% of MOLM)

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ABSTRACT

A study was conducted to determine if any inclusion of different levels of *Moringa oleifera* leaf meal (MOLM) supplement into basal diet have an effect on the village feed intake, egg production and egg quality. Four treatment were used which are T1 (0% MOLM; Control), T2 (2.5% MOLM), T3 (5% MOLM) and T4 (7.5% MOLM). A total of thirty six hens of village chicken at 50 weeks of age were used. The hens were randomly allocated into four treatment group and every treatment has 3 replicates and every replicate consist of three hens. Complete randomized design (CRD) was used for the treatment which lasted for 5 weeks which one week for adaptation period and four weeks of collection data. Feed intake, weekly egg production, egg weights, external egg quality (shell thickness), internal egg quality (albumen height and egg yolk color) were determined. Eggs from each treatment were recorded on daily basis for measurement on egg production. Sampling of eggs were done randomly twice a week throughout experimental period, and used for measuring the quality traits. Eggs were randomly selected from each treatment twice a week for egg quality traits measurement. Data were collected on external and internal egg quality and also egg production for every week throughout the experiment. The increase in MOLM levels had no effect on feed intake, and egg weights ($P>0.05$). The result showed that birds on inclusion of 7.5% MOLM performed significantly ($P<0.05$) better in terms of egg production and egg quality. There was significant difference in egg yolk color score between the eggs from 7.5% MOLM (T4) diets and control treatment (T1). Except for shell thickness were not significantly affected ($P>0.05$) by the inclusion levels of MOL in the diet. For the egg weight are significantly ($P<0.05$) decreased with the increasing levels of MOLM. It was concluded in the conditions of this study that using *Moringa oleifera* leaves meal at 7.5% in the diet as feed supplement are recommended which can improves egg production and egg quality in village hens.

ABSTRAK

Satu kajian telah dijalankan untuk menentukan sama ada kemasukan tahap yang berbeza makan daun *Moringa oleifera* (MOLM) tambahan ke dalam diet basal mempunyai kesan ke atas pengambilan makanan kampung, pengeluaran telur dan kualiti telur. Empat rawatan telah digunakan iaitu T1 (0% MOLM; Kawalan), T2 (2.5% MOLM), T3 (5% MOLM) dan T4 (7.5% MOLM). Sebanyak tiga puluh enam ayam kampung pada 50 minggu usia telah digunakan. Ayam-ayam betina secara rawak diperuntukkan kepada empat kumpulan rawatan dan setiap rawatan mempunyai 3 replikat dan setiap replikat terdiri daripada tiga ayam. Reka bentuk rawak lengkap (CRD) telah digunakan untuk rawatan yang berlangsung selama 5 minggu iaitu satu minggu untuk tempoh penyesuaian dan empat minggu data koleksi. Pengambilan makanan, pengeluaran telur mingguan, berat telur, kualiti telur luaran (ketebalan kulit telur), kualiti telur dalaman (ketinggian albumin dan warna kuning telur) telah ditentukan. Telur dari setiap rawatan telah direkodkan pada setiap hari untuk pengukuran pada pengeluaran telur. Persampelan telur telah dilakukan secara rawak dua kali seminggu sepanjang tempoh eksperimen, dan digunakan untuk mengukur kualiti telur. Peningkatan tahap MOLM tidak mempunyai kesan signifikan ke atas pengambilan makanan, dan berat telur ($P > 0.05$). Selain itu, pada kemasukan 7.5% MOLM menunjukkan kesan signifikan ($P < 0.05$) lebih baik dari segi pengeluaran telur dan kualiti telur. Purata warna telur kuning dan jumlah telur adalah signifikan ($P < 0.05$) apabila MOLM di tambah ke dalam makanan komersial berbanding dalam rawatan kawalan (T1). Hasilnya menunjukkan bahawa telur dari T4 (7.5% MOLM) lebih baik dari segi pengeluaran telur dan kualiti telur. Kecuali untuk ketebalan shell tidak terjejas dengan ketara ($P > 0.05$). Untuk berat telur adalah ketara ($P < 0.05$)

menurun dengan peningkatan tahap MOLM. Untuk kesimpulan dalam keadaan kajian ini yang menggunakan Moringa oleifera pada tahap 7.5% dalam diet sebagai makanan tambahan adalah disyorkan yang boleh meningkatkan pengeluaran telur dan kualiti telur ayam kampung.



CHAPTER 1

1.0 INTRODUCTION

1.1. Background

The “Ayam Kampong” chicken, the way village chicken is called, is popular in Indonesia and Malaysia. It is a diverse population which resulted from the uncontrolled cross-breeding of red jungle-fowl, indigenous Southeast Asian chickens and exotic chickens of various types imported in the late 1800s by European, mainly British, settlers. The village chicken is a small dual-purpose chicken. They are slow-growing breed that contributed to its low productivity. Both its physical characteristics and its coloring are highly variable. Three principal color types are recognized. The commonest is the black-red variety, in which cocks are mainly green-black with glossy red-brown back, neck hackles and saddle feathers. Other varieties are the red type and the naked-neck type.

Egg production and egg quality of village chicken egg can be important indicators both for producer or farmer and for consumers. Village chicken hens left to forage lay about 55 or 100 brown eggs per year, with an average weight of 39 g. The poor performance as an egg producer is attributed to the broodiness of the hens. In the future, egg quality is important in the marketing of the eggs either for marketing of commercial layer egg or village chicken’s egg. Egg quality is been categorized into two aspects which are external quality and internal quality. The pricing of eggs in Europe, United State and also Canada is based on the external quality and internal quality. However in Malaysia, eggs are not being screened based on these qualities but are sold based on egg weight. However, egg with external defect such as crack,

deform, dirty are not sold to public. All of them are more or less critically judged by the consumers, if not now, and then surely they will be in the future.

Egg quality can also be influenced by diets and can also be influenced by other factors such as environment and diseases. Village chicken eggs are considered a delicacy and known for their usage in traditional medicine. Hence, the price of village chicken eggs is high compared to commercial layer chicken. The poultry industry in the developing countries is facing some challenges, one of which is an increase in the cost of feed because of high prices of protein and energy sources (Abbas, 2013). Conventional feed supplement are quite expensive such as egg promoter. Therefore alternative of feed supplement to layer feed are needed. Plant based product can be used as feed supplement to improves egg quality and also egg production. Using locally plant product can reduce cost compared to buying commercial product. There are lot of plant based product available in Malaysia and has potential to be used in layer commercial diet.

1.2. Objectives

2.3.1 General objective:

To determine the effects of different levels of dietary *Moringa oleifera* Leaf Meal (MOLM) on egg production and quality.

2.3.1 Specific objectives:

1. To determine the effects of different levels of MOLM on the external egg quality based on egg weight, shell thickness and crack or soft shell.
2. To determine the effects of different levels of MOLM on the internal egg quality based on albumin height and yolk color.
3. To determine the effects of different levels of MOLM on the egg production.

1.3. Hypothesis

The inclusion of *Moringa oleifera* Leaf Meal (MOLM) as a feed supplement to village chicken will improve egg quality and egg production.

1.4. Significance of Study

The inclusion of *Moringa oleifera* Leaf Meal (MOLM) as a feed supplement to village chickens can be beneficial to farmers and reduce significantly the cost of feed supplement that is being used in village chickens.

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