



UNIVERSITI PUTRA MALAYSIA

***THE EFFECT OF DIFFERENT FEED FORMULATION ON BODY
WEIGHT GAIN, FEED INTAKE AND STRESS PARAMETER IN
GOAT***

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**THE EFFECT OF DIFFERENT FEED FORMULATION ON BODY WEIGHT
GAIN, FEED INTAKE AND STRESS PARAMETER IN GOAT**

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CERTIFICATION

It is hereby certified that we have read this project entitled “The Effect of Different Feed Formulation on Body Weight Gain, Feed Intake and Stress Parameter in Goat”, by Muhammad Saiful Azri bin Roslee and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfillment of the requirement for the course VPD 4999 – Project

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DEDICATIONS

This project paper I dedicated to:

My mom, Mawar Jaafar

a strong and gentle soul who taught me to trust in Allah and believe in hard work

My dad, Roslee Daim

for earning an honest living for us and encouraging me to believe in myself

My supervisor's newborn baby boy, Danial Imran

which literally heard my presentation and see the world on the right time,

My significant others,

Arustika Putrasakti family

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ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999 – Projek

KESAN PERBEZAAN FORMULASI PEMAKANAN TERHADAP PENAMBAHAN BERAT BADAN, PENGAMBILAN MAKANAN DAN PARAMETER STRES PADA KAMBING

Oleh

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2016

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Nutrisi seimbang adalah sangat mustahak terhadap kesihatan dan prestasi haiwan ternakan. Ia adalah yang terbaik sekiranya makanan tersebut dapat diformulasikan mengikut tahap produksi kambing. Walaubagaimanapun, sepanjang tumbesaran seekor kambing bermula dari peringkat anak ke dewasa, ia perlu melalui beberapa perubahan formulasi pemakanan bagi memenuhi kehendak harian mereka. Perubahan ini mampu menjadikan keadaan yang stres kepada kambing. Melalui eksperimen ini, penambahan berat badan dan pengambilan makanan digunakan bagi mengenalpasti prestasi dan ujian darah leukogram stres digunakan sebagai parameter stres sepanjang pelaksanaan

formulasi pemakanan yang berbeza terhadap kambing betina. Lapan belas ekor kambing betina yang mempunyai keadaan skor badan dan berat badan dalam anggaran 20kg telah dipilih dan dibahagikan kepada tiga kumpulan (n=16) dan diberikan formulasi pemakanan yang berbeza, Diet 1 adalah formulasi pemakanan yang telahpun dijalankan di ladang tersebut, Diet 2 adalah formulasi pemakanan mengikut keperluan saradiri dan Diet 3 adalah formulasi pemakanan bertujuan persediaan untuk pembiakan selama empat minggu. Berat badan ditimbang sebelum bermula eksperimen, Minggu ke-2 dan Minggu ke-4, pensampelan darah dilakukan sebelum bermula eksperimen dan Minggu ke-4 sebagai perbandingan. Pengambilan makanan pula dikira setiap hari. Kesemua data dianalisis secara statistik menggunakan perisian SPSS. Melalui kajian ini, kambing dari Diet 3 menunjukkan penambahan berat badan yang paling tinggi, diikuti Diet 2 dan Diet 1. Terdapat perubahan yang ketara ($p < 0.05$) pada penambahan berat badan bagi setiap kumpulan. Parameter stres pada kiraan sel darah putih bagi Diet 1 menunjukkan kiraan tertinggi jika dibandingkan dengan kumpulan lain tetapi tiada perubahan yang ketara ($p > 0.05$) jika dibandingkan dengan julat normal. Nisbah neutrofil:limposit untuk kesemua kumpulan adalah dalam julat normal dan tiada perubahan yang ketara ($p > 0.05$). Pelaksanaan formulasi pemakanan mengikut tahap produksi adalah disarankan kerana ia meningkatkan prestasi dan mampu mengelakkan daripada stres nutrisi yang tidak seimbang.

Kata kunci: *Formulasi Pemakanan, Penambahan Berat Badan, Pengambilan Makanan, Leukogram Stres, Nisbah Neutrofil:limposit*

ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine in partial fulfillment of the course VPD 4999 – Project.

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By

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2016

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Balanced nutrition is essential for health and performance of livestock. It is best when feed is formulated according to production stages of goat. However, as the goat grows, it may undergo transition of different feed formulation to meet its daily requirement. It may lead to a stressful condition. In this study, body weight gain and feed intake were used to determine effect on performance, whereas hematological stress leucograms were used as stress parameter during implementation of different feed formulation among does. Eighteen adult does with similar body condition score and body weight approximately 20kg were selected and divided into three groups equally (n=6) and fed with different feed formulations, Diet 1 which already being practiced in

the farm, Diet 2 which formulated for maintenance requirement and Diet 3 which formulated for flushing for four weeks. Body weight was measured before implementation, Week 2 and Week 4, blood sampling was conducted before implementation and during Week 4 for comparison and feed intake was measured every day. All of the data were statistically analyzed using SPSS. Does fed with Diet 3 showed highest body weight gain and feed intake, followed by Diet 2 and Diet 1. There was significant difference ($p < 0.05$) on body weight gain for all groups. Stress parameter on leucocyte counts for Diet 1 showed the highest number as compared to the other groups but no significant difference ($p > 0.05$) as compared to normal value. Neutrophils:lymphocytes ratio for all groups were within normal range and no significant difference ($p > 0.05$). The implementation of feed formulation according to production stages is recommended as it increases performance and prevents from nutritional stress.

Keywords: Feed Formulation, Body Weight Gain, Feed Intake, Stress Leucogram, Neutrophils:lymphocytes Ratio

1.0 INTRODUCTION

Goat is an important contributor to milk, meat and hide production in many developing countries. Generally, it can be categorized as its product namely meat and dairy goats. Goat industry plays a major role in livestock production in Asia. It had been dominated by smallholders. In 2010, Ministry of Agriculture had been reported that the population of goats is about 34% of the total ruminant sector among overall livestock industry in Malaysia. Thus, in order to ensure sustainability goat industry in the future, a long-term structured strategy is needed to be considered which includes herd health, breeding and nutritional management (Mustafa, 2010).

A balanced nutritional value is the basis of successful production. It is because even a well-planned preventive health program is unable to overcome problems which are caused by poor nutrition. Therefore, nutrition brings a paramount importance in goat industry (Sultana *et al.*, 2012). However, one of the major constraints in developing ruminant industry in Malaysia is the difficulty to provide sufficient feed in terms of quantity and quality throughout the year (Abubakr *et al.*, 2015). In order to overcome this problem, different feed formulation had been introduced according to the production stages of the goat.

Feed which includes forage and concentrate are formulated in order to meet its daily requirement. Goats should be grouped according to their nutritional needs in order to be more effectively matched feed quality and supply to animal need (Luginbuhl, 2015). Generally, diet requirement according to the production stage

can be divided into maintenance and flushing (Fillet *et al.*, 2006). A proper feed formulation is able to provide higher body weight gain and increase feed intake (Luginbuhl, 2015). However, as the goat grows from kid to adult, a transition of different feed formulation may lead to a stressful condition (Caroll, 2013).

Stress level is crucial in the livestock industry because it may affect directly on growth, reproduction, meat quality, animal welfare and disease susceptibility. Thus, it gives a potential for making a substantial economic impact. Lacking in nutritional availability is regarded as one of the stressors among goat husbandry practices, besides environmental and handling. However, specific manifestation of stress can be measured on the blood results namely concentration of white blood cells particularly on stress leucograms, total red blood cells, hemoglobin levels (Alam *et al.*, 2011) as well as blood cortisol level (Fazio *et al.*, 2000).

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