



UNIVERSITI PUTRA MALAYSIA

***THE EFFECT OF DIFFERENT FEED FORMULATION
ON NUTRITIONAL RELATED BLOOD PROFILE IN GOAT***

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**THE EFFECT OF DIFFERENT FEED FORMULATION
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A project paper submitted to the
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DEGREE OF DOCTOR OF VETERINARY MEDICINE

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CERTIFICATION

It is hereby certified that we have read this project entitled “The Effect of Different Feed Formulation on Nutritional Related Blood Profile in Goat”, by NurHafizatulAiezzahbintiDaud 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 is dedicated to all who read this thesis,

To my dearest family,

Abah

Umi

Kadek, Didi, Mek and Adik

Atuk

My late beloved UmiZie

Milo and all her babies

To my juniors,

And to all my lecturers, teachers and friends.

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Praises be to Allah for all the opportunity given to me, I'm able to breath until now and completing this project to the end.

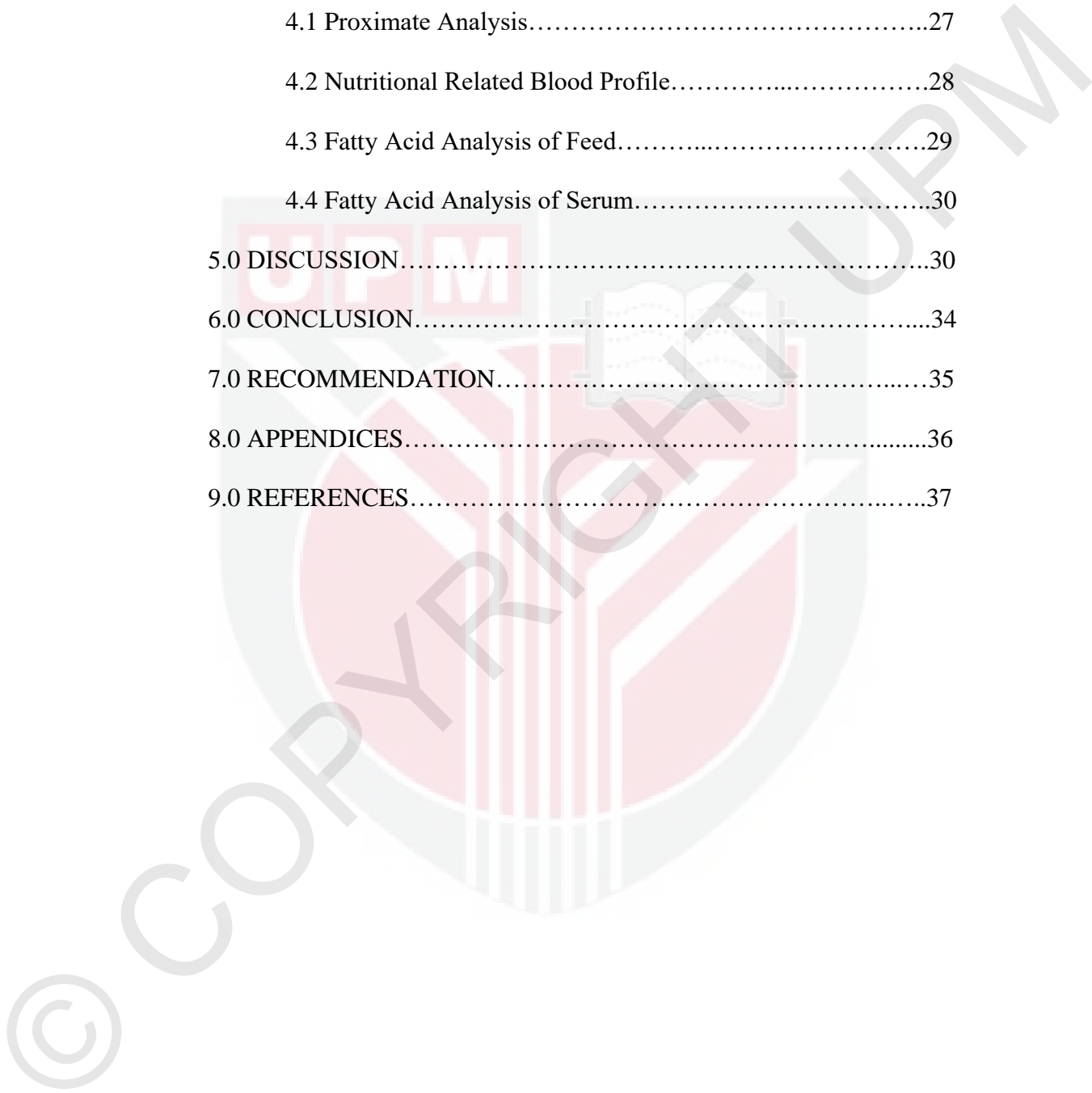
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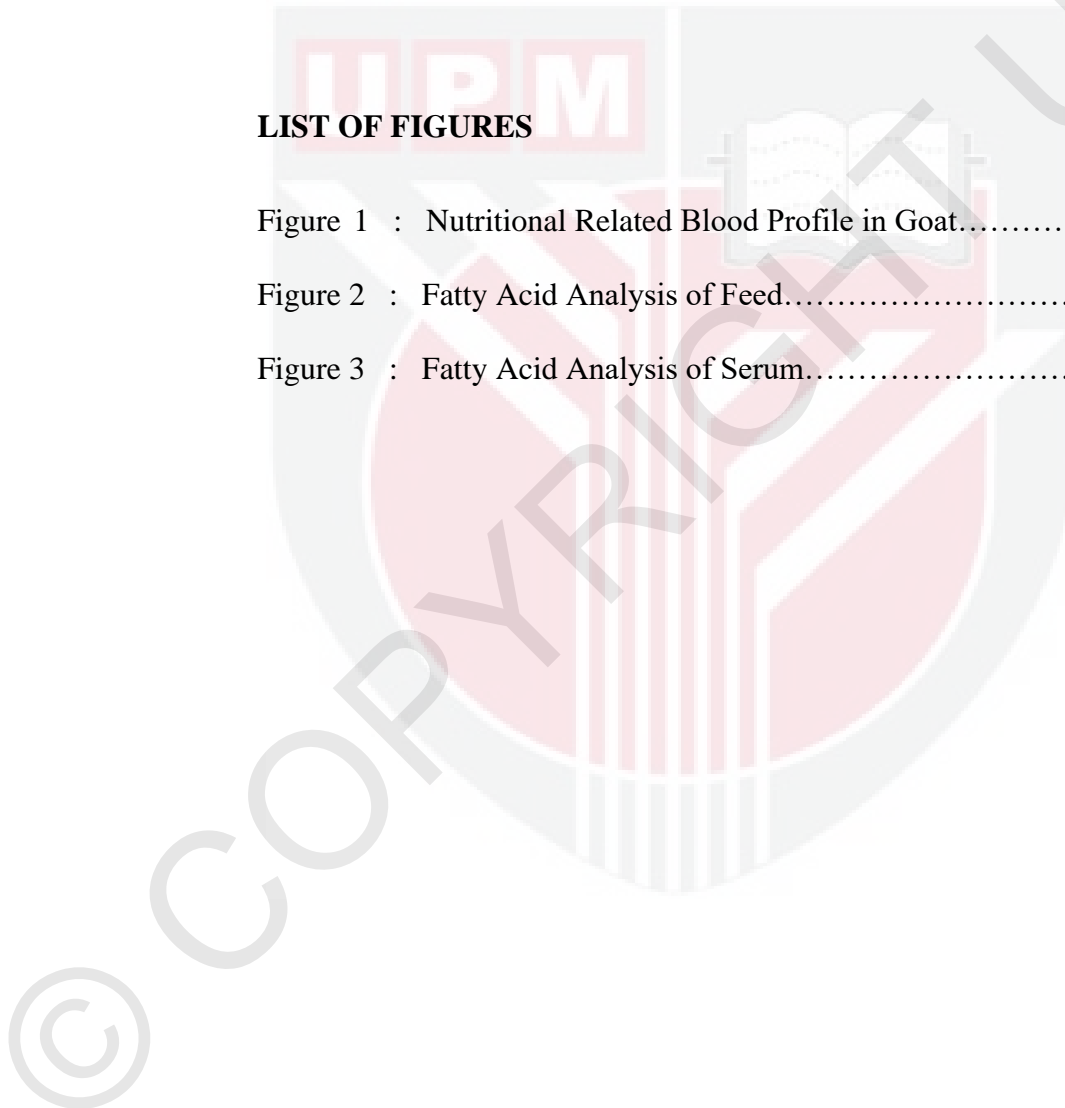


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ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4990- Projek

**KESAN FORMULASI MAKANAN YANG BERBEZA KE ATAS PROFIL DARAH
BERKAIT NUTRISI DALAM KAMBING**

oleh

Nur Hafizatul Aiezzah binti Daud**2016****Penyelia :Dr Hasliza binti Abu Hassim****Penyelia bersama:****Dr Hazilawati binti Hamzah****Dr Hafandi bin Ahmad**

Kemerosotan kesihatan haiwan dan penyakit sering kali menyebabkan penurunan produktiviti lading dan keuntungan. Pengurusan pemakanan yang bagus perlu dilaksanakan bagi meningkatkan kesihatan gerompok dan prestasil adang. Nutrisi yang cukup harus disediakan mengikut jenis produksi haiwan untuk memenuhi keperluan nutrisi. Pengenalpastian profil darah

berkait nutrisi digunakan sebagai penunju karas status nutrisi dalam haiwan. Oleh itu, kajian ini telah dijalankan untuk mengenalpasti komposisi nutrisi di dalam formulasi makanan yang berbeza dan mengenalpasti kesan perbezaan formulasi makanan ke atas profil darah berkait nutrisi. Sebanyak 18 ekor kambing betina, *Capra aegagrushircus* (Boer kacuk) telah dipilih dan dibahagikan kepada tiga kumpulan (n=6) yang berbeza mengikut formulasi makanan (Diet 1: diet yang sedang dipraktis di ladang, Diet 2; diet untuk keperluan dewasa dan Diet 3; diet untuk keperluan pembakaan). Sampel darah telah diambil sebelum dan selepas empat minggu ujian pemakanan dijalankan dan dianalisis untuk parameter tertentu. Semua data dianalisis menggunakan perisian SPSS. Analisis proksimat ke atas kesemua formulasi makanan telah dijalankan dan menunjukkan perbandingan nilai protein mentah dan lemak mentah. Glukosa, Jumlah Protein dan Kalsium menunjukkan perbezaan yang signifikan antara kumpulan (nilai $p < 0.05$) manakala Kolesterol dan Asid Lemak tidak menunjukkan perbezaan yang signifikan (nilai $p > 0.05$). Analisis Asid Lemak dalam makanan dan serum menunjukkan Asid Lemak Poli Tidak Tepu (PUFA) lebih tinggi daripada Asid Lemak Tepu (SFA). Secara keseluruhannya, Diet 3 menunjukkan nilai yang tinggi bagi semua parameter darah yang dianalisis dalam kajian ini. Oleh itu, adalah sangat penting untuk menyediakan nutrisi mengikut jenis produksi kerana protein dan tenaga yang cukup akan meningkatkan prestasi haiwan terutamanya di dalam pembiakan dan kualiti produk haiwan. Kajian ini menunjukkan formulasi makanan yang berbeza mempengaruhi profil darah berkait makanan.

Kata kunci: analisis proksimat, profil darah, asid lemak poli tidak tepu (PUFA)

ABSTRACT

Abstract of the project paper presented to the Faculty of Veterinary Medicine in partial requirement for the course VPD 4999 - Project

**THE EFFECT OF DIFFERENT FEED FORMULATION
ON NUTRITIONAL RELATED BLOOD PROFILE IN GOAT**

By

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2016

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Poor animal health and disease are usually related to the cause of low farm productivity level and indirectly to low profit margin. Good feeding strategies should be designed and implemented in order to improve the herd health thus increase farm performance. Adequate nutrient should be given to animal according to their production stages in order to meet the nutrient requirement. Determining the nutritionally related blood metabolite was used as an indicator of nutritional status. Thus, this study was conducted to determine the nutrient composition of different feed formulation and the effect of different feed formulation on nutritional related blood profile in goat. .

Eighteen female adult goats, *Capra aegagrus hircus* (Boer cross) were selected and allocated into three different groups (n=6) and assigned according to their different formulation (Diet 1; current fed by the farmer, Diet 2; maintenance diet and Diet 3; flushing diet). Blood sampling were conducted before and after fourth weeks of feeding trial and analysed for selected parameters by using SPSS software. Proximate analysis of diets was done and revealed comparable value of Crude Protein and Crude Fat. Glucose, Total Protein and Calcium level showed significant difference between groups (p-value < 0.05) while Cholesterol and Fatty Acid showed no significant difference (p-

value >0.05). Fatty Acid analysis of feed and plasma showed Polyunsaturated Fatty Acid is higher than Saturated Fatty Acid. Overall, Diet 3 shows the highest value of all blood parameters analysed in this study. Hence, it is very important to provide animal with nutrient according to production stages as sufficient protein and energy will improve the animal performance in terms breeding efficacy and quality of animal products. This study indicates that different feed formulation does affect on certain nutritional related blood profile in goat.

Keywords: proximate analysis, blood profile, polyunsaturated fatty acid

1.0 INTRODUCTION

Livestock is a very important industry as it supplies the largest source of protein for Malaysian population (Fadhilah, 2015). In general, the livestock production specifically in ruminant sector is still inadequate to meet the demand, following the increase in population and consumption. However, small ruminant industry has been steadily increasing (Livestock Statistics, Department of Veterinary Services, 2009). In 2008, the total population of goats in Malaysia was 477,480 heads which was an increment of 49,217 from the previous year 2007 (Livestock Statistics, Department of Veterinary Services, 2009). Hence, small ruminant farming particularly among smallholder, should be encouraged more by the government as this industry has good potential to improve status of Malaysia as global center of halal products. In addition, a good herd health program includes vaccination practice, reproductive management and good feeding strategies should be designed and implemented in order to improve the herd health thus increase farm performance.

Adequate nutrient should be given to animal according to their production stages in order to meet the nutrient requirement. But, to majority of smallholders, balance feeding is less concerned due to time, cost and labor

issues. Indeed, imbalance feeding could affect the physiological function due to inadequate nutrient and further lead to reduction in performance and economic importance. According to Komala *et al.*, 2011, it is important to make sure the animals diet is formulated to support optimal production and be economical so that it does not burden the poor farmers.

Hence, nutritional status of goat should be accurately assessed as such information is useful in relation to the formulation of the diets.

According to Wazir *et al.*, (1997), examining blood for their constituent could be used to monitor and evaluate health and nutritional status of animal. Analysis of biochemical properties such as glucose, total protein, blood urea nitrogen, creatinine and cholesterol is essential in diagnosing various nutritional, pathological and metabolic disorders (Daramola *et al.*, 2005) in goats.

The objectives of this study were to determine the nutrient composition of feed material used in different feed formulation and to determine the effect of different formulation on nutritional related blood profile such as Glucose, Total Protein, Calcium, Cholesterol and Fatty Acid. We hypothesized that different feed formulation may affect the nutritional related blood profile in goat.

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