



UNIVERSITI PUTRA MALAYSIA

***HAEMATOLOGICAL STUDY OF CAPRINE SUBCLINICAL AND
CLINICAL MASTITIS***

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HAEMATOLOGICAL STUDY OF CAPRINE SUBCLINICAL AND CLINICAL
MASTITIS

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It is hereby certified that we have read this project paper entitled “Haematological Study Of Caprine Subclinical and Clinical Mastitis”, by Nurul ‘Atiqah binti Khairudin and in our opinion it is satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement of the course VPD 4999 – Project.

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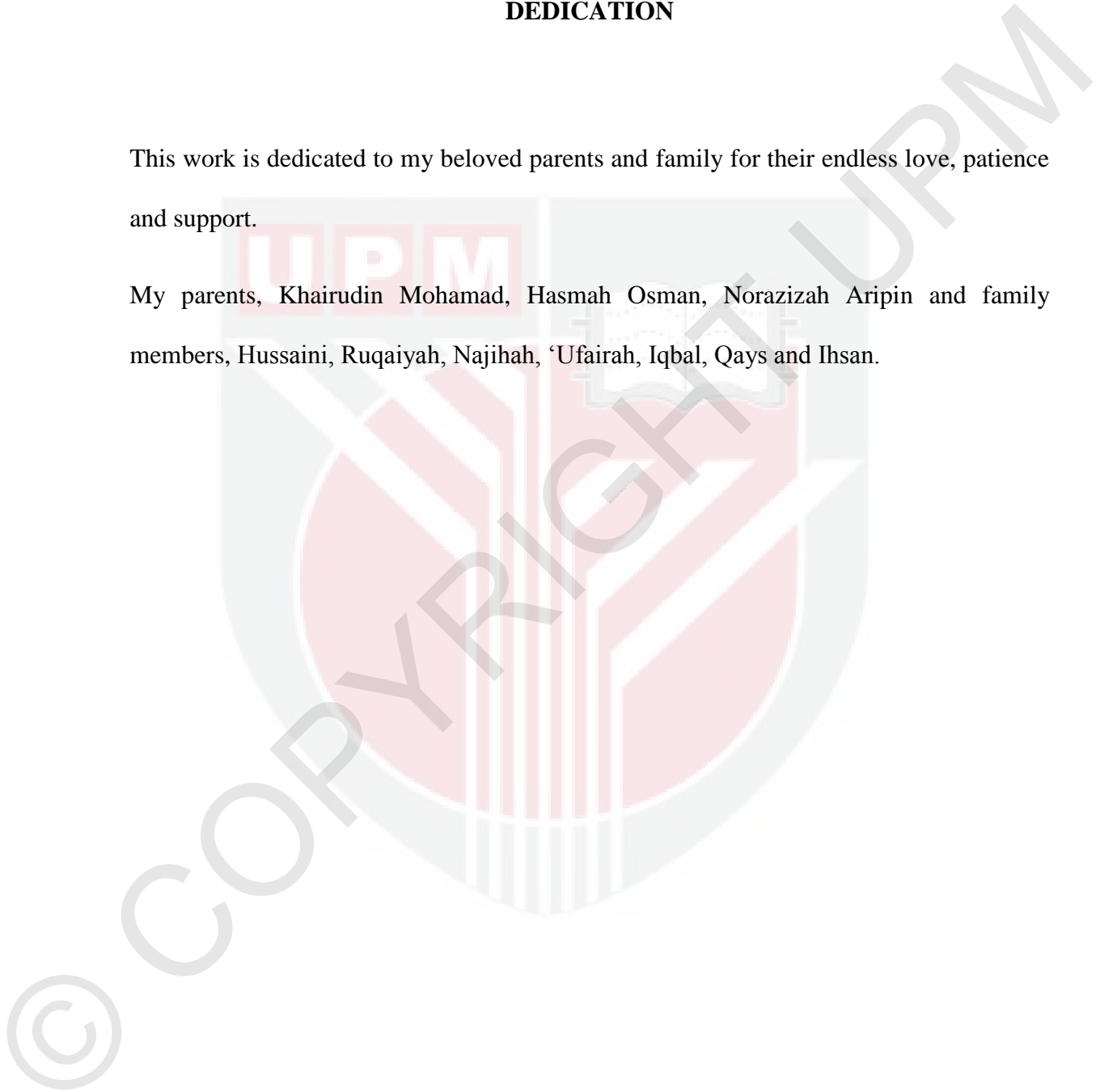
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DEDICATION

This work is dedicated to my beloved parents and family for their endless love, patience and support.

My parents, Khairudin Mohamad, Hasmah Osman, Norazizah Aripin and family members, Hussaini, Ruqaiyah, Najihah, ‘Ufairah, Iqbal, Qays and Ihsan.



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LIST OF ABBREVIATIONS

CMT	California Mastitis Test
NAGase	N-acetyl- β -D-glucosaminidase
SCC	Somatic cell count
EC	Electrical conductivity
RBC	Red blood cell
Hgb	Haemoglobin
PCV	Packed cell volume
MCV	Mean corpuscular volume
MCHC	Mean corpuscular haemoglobin concentration
WBC	White blood cell

ABSTRAK

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

KAJIAN HEMATOLOGI SUBKLINIKAL DAN KLINIKAL MASTITIS KAMBING

Oleh

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2015

Penyelia: Dr. Rozaihan Mansor

Mastitis adalah salah satu penyakit yang memberi kesan kepada ekonomi yang melibatkan ladang tenusu seluruh dunia. Analisa hematologi adalah salah satu kaedah diagnostik yang boleh memberikan maklumat yang signifikan, tambahan kepada pemeriksaan fizikal. Tujuan kajian ini adalah untuk membandingkan parameter hematologi dalam tiga kumpulan kambing yang berbeza; sihat, subklinikal mastitis dan mastitis. Sampel darah telah diambil daripada 45 ekor kambing betina menyusu baka campuran; 16 kambing sihat, 16 kambing bersubklinikal mastitis dan 13 kambing berklinikal mastitis, daripada Ladang Angkat, Fakulti Perubatan Veterinar. Sampel darah diuji untuk parameter hematologi berlainan termasuklah PCV, hemoglobin, jumlah kiraan sel darah merah, jumlah kiraan sel darah putih, jumlah mutlak sel darah putih dan indeks MCV dan MCHC.

Parameter hematologi untuk semua kumpulan telah dibandingkan dengan analisis statistik. Keputusan menunjukkan tiada perbezaan signifikan ($p > 0.05$) di antara semua nilai hematologi di bagi setiap kumpulan. Walau bagaimanapun, untuk kiraan keseluruhan sel darah putih kambing betina berklinikal mastitis signifikan ($p < 0.05$) lebih tinggi daripada kambing betina sihat, ini menunjukkan sedang berlaku tindak balas imun semasa mastitis. Leukositosis adalah satu indikasi status inflamasi seperti inflamasi akut dan kronik dan juga stres. Faktor lain yang perlu diambil kira adalah baka, adaptasi fisiologi dan peringkat laktasi yang boleh menyebabkan kepelbagaian dalam nilai hematologi. Analisis hematologi hendaklah disokong oleh kaedah diagnostik yang lain seperti kiraan sel somatic (SCC), pemeriksaan bakteria dan konduktiviti elektrik pada susu untuk mendiagnos mastitis.

Kata Kunci: subklinikal mastitis, klinikal mastitis, kambing, kajian hematologi

ABSTRACT

An abstract of the project presented to Faculty of Veterinary Medicine in partial fulfillment of the course VPD4999- Project.

HAEMATOLOGICAL STUDY OF CAPRINE SUBCLINICAL AND CLINICAL MASTITIS

By

Nurul 'Atiqah Khairudin

2015

Supervisor: Dr. Rozaihan Mansor

Mastitis is an important economic disease affecting dairy farms worldwide. Haematological analysis is one of the diagnostic procedures that can provide significant information, additional to that resulting physical examination attributes. The purpose of this study is to compare the haematological parameters in three different groups of lactating does; healthy, subclinical mastitis and clinical mastitis. Blood samples were collected from 45 cross breed does; 16 healthy, 16 subclinical mastitic and 13 clinical mastitic does, from three farms of Ladang Angkat, Universiti Putra Malaysia. Blood samples were examined for different haematological parameters such as packed cell volume (PCV), haemoglobin (Hgb), and total red blood cell (RBC) count, total white blood cell (WBC) count, absolute white blood cell count as well as the mean corpuscular volume (MCV) and mean corpuscular haemoglobin concentration (MCHC).

The haematological parameters for all groups were compared statistically. The results revealed there was no significant difference ($p>0.05$) for all haematological parameters of all the groups. However, the total white blood cell counts in clinical mastitic does were significantly ($p<0.05$) higher than that of the healthy does, which suggest an on-going immune response during mastitis. Leukocytosis is an indicator of the inflammatory status such as acute and chronic inflammation as well as during stress. Other factors should be considered such as breeds, physiological adaptation and lactational stage that may cause variations in the haematological values. Haematological analysis should be supported by other diagnostic methods such as somatic cell count (SCC), bacteriological examination and electrical conductivity of the milk to diagnose mastitis.

Keywords: subclinical mastitis, clinical mastitis, goats, haematological study

1.0 INTRODUCTION

1.1 Background of the study

Generally, there is an increase in the demand for goat milk due to an increase in society affluence and the traditional beliefs on health benefits of goat milk. However, there are challenges in dairy goat farming in Malaysia. According to Sithambaram and Nizam (2014), challenges in dairy goat farming include agricultural land, cost of feed, environment, marketing and disease. In this study, the focus will be on the most common diseases in dairy goats; mastitis. It is an economically important disease of small ruminants that is associated with decrease in milk production (Contreras et al., 2003). Previous studies on mastitis were done, especially subclinical mastitis as it is difficult to be diagnosed compared to clinical mastitis due to the absence of any visible indications (Viguiet et al., 2009). The commonly used diagnostic methods for detection of subclinical mastitis are bacterial culture, which is the “gold standard” technique for the determination of udder health status, somatic cell count (SCC), California Mastitis Test (CMT), electrical conductivity of milk (EC) as well as milk composition (Sthur and Aulrich, 2010). Haematological studies can be used as diagnostic tool in mastitis, and a study done by Ajuwape et al. (2005) had compared the haematological values between non-mastitic and also clinical mastitic does. However, the haematological values comparison between non-mastitic, subclinical and clinical mastitic does has not been conducted in any studies.

1.2 Objective of the study

To compare the haematological values in three different groups of goats (healthy, subclinical and clinical mastitis).

1.3 Hypotheses of the study

H_{01} : There is no significant difference in haematological response in goats affected by mastitis in comparison to healthy animals.

H_{A1} : There is a significant difference in haematological response in goats affected by mastitis in comparison to healthy animals.

H_{02} : There is no significant difference in haematological response in goats affected by subclinical and clinical mastitis.

H_{A2} : There is a significant difference in haematological response in goats affected by subclinical and clinical mastitis.

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