PREVALENCE OF Moraxella ovis INFECTION IN GOATS UNDER THE LADANG ANGKAT PROGRAMME OF UNIVERSITY VETERINARY HOSPITAL, UNIVERSITI PUTRA MALAYSIA

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CERTIFICATION

It is hereby certified that we have read this project paper entitled "Prevalence of *Moraxella ovis* infection in goats under the Ladang Angkat Programme of University Veterinary Hospital, Universiti Putra Malaysia and its economic impact" by Nagachandra Rao a/l Gopi Naidu 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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DEDICATION

This thesis is dedicated especially to:

- My supervisors for their untiring effort in guiding me throughout this FYP
- My family for their support and encouragement throughout my life
- Classmates of DVM 2015 for staying together with me through the thick and thin of our journey to become a veterinarian

Thank you all.

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ABSTRAK

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

KELAZIMAN JANGKITAN *Moraxella ovis* DI KALANGAN KAMBING DI LADANG-LADANG KAMBING DI BAWAH PROGRAM LADANG ANGKAT HOSPITAL VETERINAR HOSPITAL, UNIVERSITI PUTRA MALAYSIA

NAGACHANDRA RAO A/L GOPI NAIDU

FEBRUARY 2015

Penyelia: Prof Dr Abdul Rahman Omar

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Penyakit mata yang dikenali sebagai 'Infectious keratoconjunctivitis' adalah merupakan salah satu penyakit lazim di kambing dan merupakan salah satu faktor yang mempengaruhi produksi dalam industri ruminan kecil. Tujuan kajian ini adalah untuk mendapatkan kelazimanan jangkitan *Moraxella ovis* di kalangan kambing, impak ekonomi terhadap penyakit mata dan peranan lalat sebagai vektor bagi *Moraxella ovis* di kalangan ladang-ladang kambing di bawah program Ladang Angkat Hospital Veterinar Universiti. Sebanyak 60 ekor kambing telah dipilih secara rambang daripada 4 buah ladang (15 ekor kambing daripada setiap buah ladang) dan sampel mata telah diambil dengan mengunakan kapas pengesat. Pada masa yang sama, perangkap lalat

telah dipasang untuk mengumpul sampel lalat dan borang soal-selidik telah dikemukakan kepada penternak untuk mengetahui status penyakit mata di ladang mereka. Sampel mata dan sampel lalat telah dikulturkan di atas agar darah dan koloni yang telah tumbuh kemudiannya disaring menggunakan kaedah 'Gram staining' bagi menentukan koloni yang paling berkemungkinan. Koloni yang terpilih kemudiannya diuji menggunakan proses 'Polymerase Chain Reaction' (PCR) bagi menentukan sama ada koloni tersebut adalah *Moraxella ovis*. Daripada 60 ekor kambing yang diuji, 18 ekor (30%) kambing adalah positif bagi jangkitan *Moraxella ovis* dengan Ladang B yang mempunyai kadar kelazimanan yang paling tinggi dengan 6 ekor kambing positif daripada 15 ekor (40%) dan Ladang C mempunyai kadar kelazimanan yang terendah dengan 3 ekor kambing positif (20%). Kesemua sampel lalat yang telah diuji mendapat keputusan negatif untuk *Moraxella ovis*. Borang soal selidik menunjukkan bahawa 3 daripada 4 penternak (75.00%) mendapati bahawa penyakit mata merupakan salah satu masalah di ladang mereka tetapi bukan masalah yang utama. Purata peratus haiwan yang terjejas daripada penyakit mata setiap tahun adalah 16.50% dengan Ladang C yang mempunyai peratusan yang tertinggi dengan 50.00% dan Ladang D mempunyai peratusan yang terendah dengan 2.00%. Purata peratusan yang menunjukkan pengurusan sejurus selepas penyakit mata adalah 7.25% dengan Ladang C yang mempunyai peratusan yang tertinggi dengan 20% dan Ladang D mempunyai peratusan yang terendah pada 1.00%. 3 daripada 4 buah ladang (75.00%) menyatakan bahawa mereka menggunakan ubat sapu sahaja untuk merawat penyakit mata manakala yang lain turut menggunakan antibiotic sistemik selain daripada ubat sapu. Kesimpulannya,

kelazimanan jangkitan *Moraxella ovis* adalah 30% di kalangan ladang-ladang kambing di bawah program Ladang Angkat UVH, UPM dan 16.50% daripada kambing tersebut terjejas setiap tahun akibat penyakit mata dengan 7.25% menunjukkan pengurusan selepas dijangkit.

Kata kunci: Penyakit mata, *Moraxella ovis*, Polymerase Chain Reaction, Impak ekonomi

ABSTRACT

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

PREVALENCE OF *Moraxella ovis* INFECTION IN GOATS UNDER THE LADANG ANGKAT PROGRAMME OF UNIVERSITY VETERINARY HOSPITAL, UNIVERSITI PUTRA MALAYSIA

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FEBRUARY 2015

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Infectious keratoconjunctivitis or pink eye disease is recognized as one of the common diseases affecting the small ruminant industry as well as an important factor affecting production in this industry. The purpose of this study is to know the prevalence of *Moraxella ovis* infection in goats, the economic impact of pink eye disease and the role of flies as a vector of *Moraxella ovis* in the goat farms under the Ladang Angkat Program of UVH, UPM. 60 goats were selected randomly from 4 farms (15 goats per farm) and subconjunctival swab samples were taken from the animals. At the same time, a fly trap was set and a questionnaire was posed to the owner regarding

the status of pink eye disease in their farm. Both the subconjuctival swabs and the fly samples were cultured on blood agar and the colonies were screened using Gram staining to isolate the most likely colonies. The pure isolates were then subjected for conventional Polymerase Chain Reaction (PCR) to detect for *Moraxella ovis*. From the 60 goat samples, 18 samples (30.00%) were positive for *Moraxella ovis* with Farm B had the highest prevalence where 6 goats were positive out of 15 (40.00%) and Farm C had the lowest prevalence where only 3 goats were positive(20.00%) for *Moraxella ovis*. Meanwhile, none of the fly samples were positive for *Moraxella ovis*. The questionnaire revealed that 3 out of 4 farmers (75.00%) opted that pink eye disease is a problem in the farm but it is not a priority or important disease in the farm. The mean percentage of animals affected annually was 16.50% according to the farmers with Farm C had the highest percentage of 50.00% and Farm D had the lowest of 2.00%. The mean percentage of goats that showed emaciation following clinical signs of pink eye disease were 7.25% with Farm C had the highest percentage of 20.00% and Farm D had the lowest percentage of 1%. For treatment, 3 out of 4 farms (75.00%) only used eye ointment or spray for treatment while the other farm opted for systemic antibiotic in addition to the eye ointment or spray. Therefore, we have concluded that the prevalence of *Moraxella ovis* infection among the goats in farms under the Ladang Angkat Program of UVH, UPM is 30.00% and the mean annual infection of pink eye is about 16.50% with 7.25% showing significant emaciation following the manifestation of clinical signs.

Keywords: Infectious keratoconjunctivitis, pink eye disease, *Moraxella ovis*, Polymerase Chain Reaction, Economic impact.

Chapter 1 : Introduction

Infectious keratoconjunctivitis or better known as pink eye disease is a term used to describe the combined inflammation of the cornea and the conjunctiva that are caused infectious bacteria that are highly contagious in goats (Schoenian, 2009). This disease will cause clinical signs such as cloudiness and redness of the cornea and the conjunctiva, hence, the name pink eye disease, with eye discharges that are serosanguinous originally and turns to mucopurulent and in severe cases, cause temporary or permanent blindness (Walker, 2007). This will lead to weight loss, reduced lactation and increase the cost of treatment in the animals if steps to control and treat the disease is not taken (Angelos, 2013). There are many predisposing factors such as age, breed, dusty condition, flies and so on for this disease.

There are many agents responsible for this disease in goats and they are *Chlamydophila pecorum,* bacteria from the *Mycoplasma spp* (esp. *Mycoplasma conjunctivae*), *Moraxella ovis, Colesiota ovis, Listeria monocytogenes* and *Acholeplasma oculi* (Angelos, 2013). In this study, the aim was to study the prevalence of *Moraxella ovis* in goats under the Ladang Angkat programme, Faculty of Veterinary Medicine, UPM.

Moraxella ovis is a Gram negative bacteria that are arranged in pairs with the adjacent sides flattened and the division in the two planes are right angle to each other . In some cases, tetrad formation may be observed and the bacteria are non-motile (Elad *et al,* 1988). After being cultured on blood agar for 48 hours, the colonies that are

observed appear about 5mm in diameter and they are greyish white with low convexity, appearing almost flat after longer incubation period.

Infectious keratoconjunctivitis is considered as one of the common disease affecting goats in Malaysia with most of the farmers being aware of the disease (Yusof, 2013). Despite this, there are no studies done previously is Malaysia regarding this disease with only some isolated case studies published previously. Therefore, this study was proposed to achieve the following objectives:

1) To determine the prevalence of *Moraxella ovis* infections in goats under the Ladang Angkat Program of University Veterinary Hospital, Universiti Putra Malaysia.
2) To determine the economic impact of pink eye disease in terms of production and treatment in the farms under the Ladang Angkat Program of University Veterinary Hospital, Universiti Putra Malaysia.
3) To determine the role of flies as a vector of *Moraxella ovis*.

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