



UNIVERSITI PUTRA MALAYSIA

***SEROPREVALENCE OF SMALL RUMINANT LENTIVIRUS (SRLV)
AMONG SMALL RUMINANT IN FOSTER FARM PROGRAMME,
FPV, UPM***

VEENOSHA D/O NEHRU RAJU

FPV 2017 35

**SEROPREVALENCE OF SMALL RUMINANT LENTIVIRUS
(SRLV) AMONG SMALL RUMINANT IN FOSTER FARM
PROGRAMME, FPV, UPM.**

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A project submitted to the
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In partial fulfilment of the requirement for the
DEGREE OF DOCTOR OF VETERINARY MEDICINE

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It is hereby certified that we have read this project paper entitled “Seroprevalence of Small Ruminant Lentivirus (SRLV) Among Small Ruminant in Foster Farm Programme, FPV, UPM ”, by Veenosha Nehru Raju and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirement for the course VPD 4999 – Final Year Project

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DEDICATION

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This project dedicated to
all veterinarians and future veterinarians,
my parents, sisters and DVM 2017.

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ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada kursus VPD 4999- Projek Ilmiah Tahun Akhir

Oleh

Veenosha Nehru Raju

2017

Penyelia: Prof. Madya Dr. Faez Firdaus Jesse Abdullah

Penyakit kambing Caprine Arthritis-Ensefalitis Virus (CAEV) merupakan penyakit yang tidak boleh diubati dan memberi impak terhadap kesan sosial dan ekonomi. Tanda-tanda klinikal boleh diperhatikan pada anak kambing iaitu encephalitis, dan artritis kronik, mastitis radang dan penyakit pernafasan progresif di kalangan kambing dewasa. Kes pertama CAE yang dilaporkan di Malaysia adalah pada tahun 2010, dan satu lagi kes CAE disyaki telah dilaporkan pada tahun 2013. Sejak itu, tiada pemeriksaan serolgi dilakukan. Oleh itu, kajian ini bertujuan untuk menentukan seroprevalance CAE dalam kalangan kambing di Ladang Angkat FPV, UPM serta faktor-faktor risiko yang dikaitkan dengan penyakit ini. Sampel darah telah dikumpul daripada 91 kambing melalui kaedah persampelan

mudah. Serum darah telah digunakan untuk ELISA kit yang kompetitif untuk mengesan antibodi terhadap virus CAE. Dari 91 sampel kambing, 8 sampel (8.8%) adalah positif. Pengurusan biosekuriti, sumber asal kambing dan jantina haiwan merupakan factor risiko yang penting bagi kelaziman penyakit CAE di Program Ladang Angkat, FPV, UPM. Oleh itu, dapat disimpulkan bahawa kelaziman CAE di kalangan kambing di Program Ladang Angkat, FPV, UPM adalah rendah. Walau bagaimanapun langkah-langkah kawalan seperti ujian serologi dan pemusnahan haiwan positif atau pengasingan haiwan yang dijangkiti dari ujian haiwan negatif boleh menjadi amalan yang penting untuk mengawal penyebaran mendatar di kalangan kambing.

Kata kunci: Caprine arthritis encephalitis (CAE), kambing, ladang angkat, kelaziman

Abstract

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

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By

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2017

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Mustapha**

Caprine Arthritis-Encephalitis Virus (CAEV) is an incurable disease of goats that has both social and economic impacts. Clinical disease in goats includes encephalitis in kids; chronic arthritis, inflammatory mastitis and progressive respiratory disease in adults. The first reported case of CAE in Malaysia was in year 2010, and another suspected case of CAE was reported in year 2013. Since then no screening was done. Therefore the study was

designed to determine the seroprevalance of CAE among goat population in Foster Farm Programme of FPV, UPM and the risk factors associated with this disease. Blood samples were collected from 91 goats via convenient sampling method. The blood serums were used for the competitive ELISA kit to detect antibody towards CAE virus. From the 91 goat samples, 8 samples (8.8%) were positive for CAE. Biosecurity management, source of origin and sex of the animal were important risk factors for the prevalence of CAE in Foster Farm Programme, FPV, UPM. Therefore it can be concluded that seroprevalance of CAE among goat population in Foster Farm Programme, FPV, UPM is low. However control measures such as testing and culling positive animals or segregation of infected animals away from test negative animals can be an important practice for control of horizontal spread among goat population.

Keywords : Caprine arthritis encephalitis (CAE), goats, foster farm, seroprevalance

Chapter 1.0: Introduction

Caprine arthritis encephalitis virus (CAE) is a single-stranded, icosahedral, RNA virus of the family *Retroviridae* and the sub-family *Lentivirinae* (Shelly,2004).The lentiviruses compose a taxonomic group of pathogens that include the human immunodeficiency viruses, HIV-1 and HIV-2, visna-maedi virus of sheep (visna), caprine arthritis-encephalitis virus (CAEV), equine infectious anemia virus (EIAV), feline immunodeficiency virus (FIV), bovine immunodeficiency virus (BIV) and immunodeficiency viruses of Asian macaques and several species of African monkeys (SIV) (Shelly, 2004).

CAEV is closely related to the viruses that cause Ovine Progressive Pneumonia (OPP) and meadi-visna in sheep, and together these are referred to as small ruminant lentiviruses (SRLVs) (Christine, 1990). The ability of lentiviruses to cause lifelong infections is due to their tropism for cells of the immune system, particularly cells of monocyte-macrophage lineage (Christine, 1990). The CAE virus has a predilection to infect mononuclear cells, specifically tissues macrophage of the lung, central nervous system, synovium and mammary gland (Shelly, 2004).

CAE virus infects goat primarily through horizontal transmission which is via ingestion of infected milk and through direct contact between goats via shedding of virus in the saliva and other body fluids secretions (Dyson and Linklater, 1979).

Most goats infected with CAE virus are asymptomatic, but there are five major clinical presentations associated with viral infections including arthritis, encephalitis, interstitial pneumonia, mastitis and progressive weight loss (Matthews, 1999). The most common clinical manifestation seen in adults is arthritis in any joints, most notably the carpal joints('big knee) and encephalitis in kids less than 6

months of age (**Nathanson,1985**). The encephalitic form is more common in kids between 2 and 6 months of age where they may show signs of in coordination, gradual paresis and paralysis affecting the hind limbs and progressing to the forelimbs (**Shelly, 2004; Christine, 1990**).

A combination of history, clinical signs, positive serology tests, post-mortem lesions, histopathological lesions, and exclusion of all other possible diseases is necessary to diagnose CAE (**Anderson, 1985**).

Prevention of CAEV is based on the removal of kids from their dam at birth, and feeding the kids heat-treated colostrum and pasteurized milk until weaning. Serologic testing and segregation or culling of seropositive goats is necessary to minimize horizontal transmission of CAEV (**Anderson, 1985**).

The first reported case of CAE outbreak in Malaysia was in 2010; however since then there is no data being collected (**Noordin, 2010**). However, there was a suspected CAE case in Ladang Angkat reported by **Jesse et al, 2013** but no screening was done. This study was designed to screen the disease among small ruminant in Ladang Angkat FPV , UPM and to have a better Herd Health Programme (HHP). Therefore, this study was proposed to achieve following objectives:

1. To determine the seroprevalence of small ruminant lentivirus (SRLV) among small ruminant in Ladang Angkat FPV, UPM.
2. To record the risk factors that are associated with seroprevalance of small ruminant lentivirus (SRLV) among small ruminant in Ladang Angkat FPV, UPM.

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