Cairo University
Faculty of Veterinary Medicine
Department of Virology

Virological Studies on equine herpesvirus-1 and 4 in Arabian and foreign horses

A thesis presented by

Zinab Srteb H A Alshammari
Bachelor of Scince-Zoology,Qatar University(2001)
Diploma in Vet. Microbiology Cairo University(2010)
For the degree of
Master in Veterinary Medical Sciences
[Virology]

Under supervision of

Prof. Dr. Mohamed Abd El-ameed Shalaby
Professor of Virology, Department of Virology& Immunology
Faculty of Veterinary Medicine, Cairo University

Prof.Dr. Ahmed Abd El-Ghani El-Sanousi
Professor of Virology
Faculty of Veterinary Medicine
Cairo University

Dr. Mohamed Haroun Ismail
Associate Professor of Virology & Immunology
Virology Unit, Veterinary Laboratory,
Department of Animal Resource State of Qatar

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Approval Sheet

This is to approve that Thesis presented by

Zinab Srteb H A Alshammari

For the degree of MV.Sc. (Virology) has been approved by the examining committee

Prof. Dr. Mohamed Saed Mohamed El-Shahidy
Professor and Chairman of Virology Dept.
Faculty of Veterinary Medicine
Seuz canal University

Prof . Dr- Hussein Aly Hussein
Professor of Virology
Faculty of Veterinary Medicine
Cairo University

Prof. Dr. Ahmed Abd El-Ghani El-Sanousi
Professor of Virology
Faculty of Veterinary Medicine,
Cairo University. (Supervisor)

Prof . Dr- Mohamed Abd El-Hamid Shalaby
Professor of Virology
Faculty of Veterinary Medicine
Cairo University (Supervisor)

2015

العنوان: كلية الطب البيطرى- الجيزة- مصر
تليفون: 37510309- 3571305
الرمز البريدى: 12211
فاكس: 35725240

Cairo University
Faculty of Veterinary Medicine
Department of Veterinary

Supervision sheet

Prof. Dr. Mohamed Abd El-ameed Shalaby

Professor of Virology& Immunology
Faculty of Veterinary Medicine
Cairo University

Prof. Dr. Ahmed Abd El-Ghani El-Sanousi

Professor of Virology
Faculty of Veterinary Medicine
Cairo University

Dr.Mohamed Haroun Ismail

Associate Professor of Virology & Immunology
Virology Unit , Veterinary Laboratory
Department of Animal Resource
State of Qatar

2015

Dedication

To My Father, Mother,

My partner, Kids and my best friends

Name: Zinab Srteb H A Alshammari

Nationally: Qatari

Date of birth: 28/10/1977

Degree : Master

Department: Virology

Thesis Title: Virological Studies on equine herpesvirus-1 and 4 in Arabian and foreign horses

Abstract

A preliminary field-based investigative study was conducted for screening, possible detection and determination of presence of equine herpes virus-1, 4 and their antibody prevalence in blood sera collected from 230 adult and an aborted fetus of Native, Arabian and foreign horses in Qatar and Egypt. Using commercial kits, 99% (120 out of 121) of the screened serum samples belonging to the Qatari horses seroconverted to either EHV-1 or EHV-4 types. Of the total positive, 100% were anti-EHV-4 antibody positive versus 16% anti-EHV-1 antibody positive. All of the anti-EHV-1 antibody positive sera were also anti-EHV-4 antibody positive. Interesting enough, only 0.06% of the antibody positive serum samples were recorded originating from horses of a previous history of vaccination against the two viruses. None of the 49 corresponding peripheral mononuclear cells, randomly selected from 3 ELISA positive groups were *real time* PCR positive for either specific EHV-1 or 4 specific primer sets.

Screening results against total anti-EHV-1, 4 antibodies of the 109 Egyptian horses sera indicated positive anti-EHV 1, 4 antibodies in 21%. While 65% of the positive samples were originating from vaccinated horses, 35% were not.

A liver specimen out of 12 tissue samples originating from EHV-1, 4 suspected cases retrieved EHV-4 cDNA equivalent to 580bp viral glycoprotein B specific primer sets using nested-PCR assay. The strain was designated EHV-4 VRLCU-412-2015. Sequence analysis of 450bp of the amplified fragment for phylogenic tree construction revealed 100% compatibility with six of year 2011 EHV-4 the Turkish GenBank reference isolates.

Based on the epidemiology of EHV-1 and 4, their infection and pathogenic potentialities, the humoral immunity threshold of the positive sera, the molecular analysis and the natural habitat of the candidate horses; the obtained results infer previous natural exposure to EHV with possible circulation of EHV-1 and 4 among these horses.

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