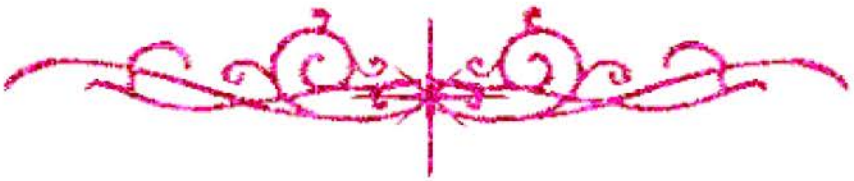
بسم الله الرحمن الرحيم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



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شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

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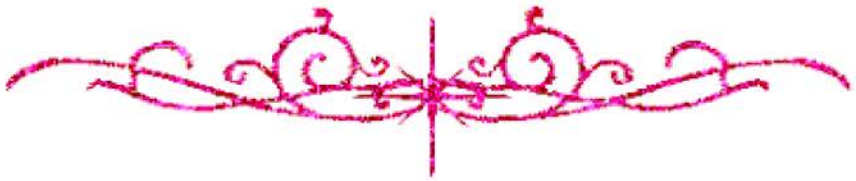
بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل

HOSSAM MAGHRABY

بسم الله الرحمن الرحيم

"قالوا سبحانك لا علم لنا إلا ما

علمتنا إنك أنت العليم الحكيم"

صدق الله العظيم

سورة البقرة آية ٣٢

Persistence of Foot-and-Mouth Disease Virus in Farm Animals in Upper Egypt (Sohag) in Relation to Its Antibody Response

THESIS

Submitted to The High Institute of Public Health
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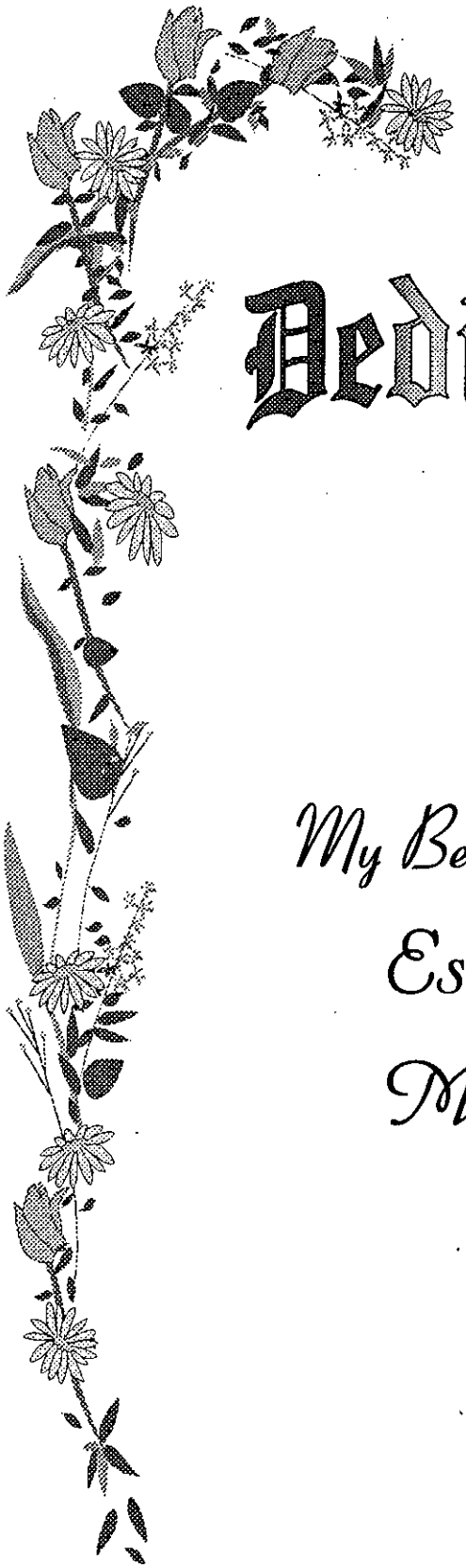

Dedicated To

My Beloved children

Esraa

Mohamed

My sincere husband

Acknowledgement

"Firstly, I thank Allah

for

helping me completing this work"

I'd like to express my deepest appreciation and gratitude to **Prof. Dr. Hadia Ahmed Abou Donia**, Professor of Microbiology, High Institute of Public Health, Alexandria University, for her careful guidance and continuous encouragement throughout this work. I am surely indebted to her for her valuable help.

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CONTENTS

LIST OF ABBREVIATIONS

Ab	:	Antibody
d.p.v	:	Days post vaccination
SAT	:	South African Territories
BHK	:	Baby hamster kidney
IB-RS-2	:	The big kidney cell line
BTY	:	Bovine thyroid cells
WRLB	:	World reference laboratory birbright
Ad5 wt	:	Adenovirus type 5 wild type vaccine strain
IVB	:	International vaccine bank
UK	:	United Kingdom
nm	:	Nanometer
µl	:	Microliter
No.	:	Number
PBS	:	Phosphate buffer saline
T_{20}	:	Tween 20
FMD	:	Foot-and-Mouth disease
FMDV	:	Foot-and-Mouth disease virus
ELISA	:	Enzyme linked immunosorbenassay
PCR	:	Polymerase chain reaction
RT/PCR	:	Polymerase chain reaction
Lp ELIZA	:	Liquid-phase blocking sandwich ELISA
RGD	:	Arginine-Glycine-Aspartic acid
MHCI	:	Major histocombatabiliy class-I
MHCH	:	Major histocombatability class-II
EU	:	European Union
EMC	:	Encephalomyocarditis
MLV	:	Murine leukemia virus
CTL	:	Cytotoxic T lymphcytes

INTRODUCTION

Introduction

Historical review

Foot and mouth disease (FMD) was the first animal disease to be attributed to a virus and the second virus to be discovered.[1] The earliest descriptions of FMD were of an outbreak in Northern Italy in 1514, and in Southern Africa in 1780.[2] In Great Britain, outbreaks of FMD occurred until the end of the 1960s.[3] Since that time, Western Europe has been virtually free of FMD. In Saudi Arabia outbreaks of FMD have been recorded in the years 1971-1978.[4] In South America including Argentina, Chile and Andes, many outbreaks were reported in the following years 1978, 1983 and 1984. FMD was also reported in 1983 and 1984 in Israel, Lebanon, Iran, Laos, Nepal, Yemen and Malaysia.[5]

Three outbreaks were reported in 1984 in Germany, although, it was free since 1982. In Italy, where the last reported case dated back to 1981. FMD was again observed in 1984, 1983 on larger scale. In 1995 there were peaks of spread of FMD in United Kingdom.[6] Recently in 1997, a devastating outbreak of FMD in Taiwan was reported [7] and in 1999 two outbreaks were investigated in India.[8]

In Egypt, during the last 30 years, FMD took an enzootic form. Several out breaks were reported during 1953, 1958 and 1960.[9] FMD Vs type O and A were isolated in 1966, 1967, 1974 and 1975.[10,11] During 1959 – 1984 the disease appeared each year and attacked the susceptible animals.[12,13,14] In 1988, it was recorded that a high prevalence of FMD among different animal species (cattle, buffaloes and sheep) during the 1987 outbreak and type "O_1" strain was isolated.[15]

Structure and open reading frame of the FMDV

FMDV is the sole member of the genus Aphthovirus which belongs to Picornaviridae; a family of small RNA containing viruses. The capsid is a non-enveloped icosahedral in shape and approximately 28 nm in diameter. The infectious virus particle is a positive sense, containing a single strand of RNA approximately 8.5 Kb long.[16] The genome containing a covalently bound polypeptide; VPg at its 5` end and a 100- to 150-base polycytidylic acid sequence about 300 nucleotides from the 5` end and terminates in a polyadenylic acid tract approximately 40 residues long.[16,17] The RNA codes for a single polyprotein of about 250.000 daltons, which is subsequently cleaved by cellular and viral proteases to yield viral structural and nonstructural polypeptides.[18] Four primary genome products result from initial protease cleavage of 250-Kilodalton polyprotein. These products are used to define the four functional genome regions. For FMDV, these four regions are as follows: an L region, 5` to the capsid components, that codes for a leader polypeptide (P I6-L); a P1 region encoding the precursor for capsid polypeptides (PgI); a P2 region coding for the precursors (P 56) of polypeptides in the middle genome region and a P3 region that encodes the precursor (P 102), which includes the VPg molecules, a putative viral protease and the viral RNA polymerase three. The polypeptides described in this manuscript are identified by their molecular weights as determined by polyacrilamide gel electrophoresis followed by map coordinates (Table 1).[16] The restriction map of the