



UNIVERSITI PUTRA MALAYSIA

***IN VITRO AND IN VIVO STUDIES OF MALAYSIAN
ISOLATES OF AVIAN INFLUENZA VIRUS***

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FPV 1993 5

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

اِفْرَأْ بِاَنفُسِكُمُ الَّذِي خَلَقَ ① خَلَقَ الْاِنْسَانَ مِنْ عَلَقٍ ①
اِفْرَأَوْ رَبَّكَ الْاَكْرَمَ ② الَّذِي عَلَّمَ بِالْقَلَمِ ① عَلَّمَ الْاِنْسَانَ
مَا لَمْ يَكُنْ يَعْلَمُ ①

مَدَقِي الشَّرِّ الْعَظِيمِ
سُوْرَةُ الْقَلَمِ ١-٥

***IN VITRO AND IN VIVO* STUDIES OF MALAYSIAN
ISOLATES OF AVIAN INFLUENZA VIRUS**

By

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Dedicated with my highest esteem to the great leader

SADDAM HUSSEIN

**who is the brave leader of the Iraqi people, of glorious men who
strive for their freedom, independence and equality among states**

To my beloved wife

JINAN

**Who was the source of inspiration, understanding and
encouragement throughout my study**

Loving Sons

SAIF and MUSTAFA

Loving Daughters

NOOR, ALAA and HANAN

For their endless patience and understanding



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LIST OF ABBREVIATIONS

ACD	Acid Citrate Dextrose
AIV	Avian Influenza Virus
BHK-21	Baby Hamster Kidney-21
CAM	Chorioallantoic Membrane
CEC	Chick Embryo Cell
CEF	Chicken Embryo Fibroblast
CPE	Cytopathic Effect
CPI	Contact Pathogenicity Index
DDSA	Dodycenyle Succinic Anhydride
DMAE	Dimethylaminoethanol
EDTA	Ethylene Diamine Tetra-acetate
EID50	Fifty percent Embryo Infective Dose
EM	Electron Microscope
ER	Endoplasmic Reticulum
FBS	Foetal Bovine Serum
FPV	Fowl Plague Virus
H	Haemagglutinin
HA	Haemagglutination
HAU	Haemagglutination Unit
HBSS	Hank's Basal Salt Solution
HeLa cell	Cervical Carcinoma Cell
H&E	Hematoxylin and Eosin
IAPI	Intra-air sac Pathogenicity Index



ICPI	Intracerebral Pathogenicity Index
IgA	Immunoglobulin A
IP	Immunoperoxidase
IMPI	Intramuscular Pathogenicity Index
INPI	Intranasal Pathogenicity Index
ITPI	Intratracheal Pathogenicity Index
IV	Influenza Virus
IVPI	Intravenous Pathogenicity Index
L cell	Adrenal Mouse Fibroblast
MDBK	Madin-Darby Bovine Kidney
MDCK	Madin-Darby Canine Kidney
MDT	Mean Death Time ²
MEM	Minimal Essential Media ⁸
MK	Monkey Kidney
mRNA	Messenger Ribonucleic Acid
MP	Matrix Protein
MW	Molecular Weight
NA	Neuraminidase
NDV	Newcastle Disease Virus
NI	Neuraminidase-Inhibition
NP	Nucleoprotein
NS1	Non-Structural Protein 1
OD	Optical Density
ODD	Ortho-dianisidine

PBSA	Phosphate Buffered Saline A
PD	Proportionate Distance
PEG	Polyethyleneglycol
PFU	Plaque Forming Unit
pH	Hydrogen-ion concentration
Pi	Post inoculation
PMV	Paramyxoviruses
PTA	Phosphotungstic Acid
RM	Malaysian Ringgit
RNA	Ribonucleic Acid
RNP	Ribonucleoprotein
rpm	Revolutions Per Minute
SEK	Swine Embryo Kidney
SEM	Scanning Electron Microscope
SV40	Simian Virus 40
TCID50	Fifty Percent Tissue Culture Infective Dose
TEM	Transmission Electron Microscope
TEN	Tris-EDTA-NaCl
ts	Temperature Sensitive
UPM	Universiti Pertanian Malaysia
WHOEC	World Health Organization Expert Committee
W/V	Weight/Volume

