

TABLE OF CONTENT

FRONT COVER	i
ENDORSEMENT FORM	ii
DECLARATION	iii
RESULT SEMINAR ASSESSMENT	iv
THESIS SEMINAR ASSESSMENT	v
SUMMARY	vi
ABSTRACT	viii
ACKNOWLEDGMENT	ix
TABLE OF CONTENTS	xi
LIST OF TABLE	xiii
LIST OF FIGURES.....	xiv
LIST OF APPENDICES	xv
ABBREVIATIONS AND SYMBOLS	xvi
CHAPTER 1 INTRODUCTION	1
1.1 Background	1
1.2 Theoretical Base	3
1.3 Problem Statement	3
1.4 Research Objective.....	4
1.5 Research Advantage	4
CHAPTER 2 LITERATURE REVIEW	6
2.1 Newcastle Disease	6
2.2 Etiology& Characteristic of Newcastle Disease Virus.....	6
2.2.1 Virion Structure.....	8
2.2.2 Genome Mapping	9
2.3 Epidemiology of Newcastle Disease Virus	9
2.4 Clinical Features of Newcastle Disease	10
2.5 Post-Mortem Findings of Newcastle Disease	12
2.5.1 Gross Lesion	12
2.5.2 Histopathologic Findings	13

2.6 Diagnostic Method and Measuring Infectivity of Newcastle Disease	15
2.6.1 Hemagglutination Inhibition (HI) Assay.....	15
2.6.2 Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) Assay	16
2.7 Biological Characterization for Newcastle Disease Virus	17
2.7.1 Mean Death Time (MDT)	17
2.7.2 Intracerebral Pathogenicity Index (ICPI)	17
2.7.3 Intravenous Pathogenicity Index (IVPI).....	18
2.8 Control & Prevention of Newcastle Disease	18
2.8.1 Vaccination.....	19
 CHAPTER 3 MATERIALS AND METHODS.....	21
3.1 Research Design	21
3.2 Sample	21
3.3 Definition of Operational Variable.....	21
3.4 Research Location	22
3.5 Research Materials & Equipment.....	22
3.6 Research Methods	23
3.6.1 Mean Death Time (MDT)	23
3.6.2 Intracerebral Pathogenicity Index (ICPI)	24
3.6.3 Intravenous Pathogenicity Index (IVPI).....	24
3.7 Research Framework.....	26
 CHAPTER 4 RESEARCH RESULT.....	27
4.1 Mean Death Time (MDT) Result & Analysis	28
4.2 Intracerebral Pathogenicity Index (ICPI) Result & Analysis	30
4.3 Intravenous Pathogenicity Index (IVPI) Result & Analysis	32
 CHAPTER 5 DISCUSSION	37
 CHAPTER 6 CONCLUSION & SUGGESTION	41
6.1 Conclusion.....	41
6.2 Suggestion	41
 REFERENCES.....	42
 APPENDIX.....	48

LIST OF TABLES

3.1	Pathogenicity Indicators	24
4.1	ICPI Result for Sample ND/A1/2019	29
4.2	ICPI Result for Sample ND/A2/2019	30
4.3	ICPI Result for Sample ND/A3/2019	30
4.4	IVPI Result for Sample ND/A1/2019	31
4.5	IVPI Result for Sample ND/A2/2019	32
4.6	IVPI Result for Sample ND/A3/2019	32
4.7	Summary Of Biological Characteristics	34

LIST OF FIGURES

Figures

2.1 Diagramatic representation of paramyxovirus structure7

2.2 Multifoccal hemorrhages in the proventriculus of bird inoculated
with NDV12

2.3 Lesion (hyperemia) on meninges of bird inoculated with NDV13

2.4 Duck spleen with slight lymphoid depletion and numerous apoptotic
cell in the germinal center.14

4.1 Representation of clinical sign observed in IVPI36

LIST OF APPENDICES

Appendix

1. MDT Observation Tables.....	48
2. Research documentation	51

ABBREVIATIONS AND SYMBOLS

APMV	: Avian Paramyxovirus
BALT	: Bronchus Associated Lymphoid Tissue
CNS	: Central Nervous System
DNA	: Deoxyribonucleic Acid
DOC	: Day Old Chicken
F	: Fusion (protein)
GALT	: Gut Associated Lymphoid Tissue
H	: Haemagglutinin
HA	: Haemagglutination (test)
HAU	: HA Unit
HE	: Hematoxilyn-Eosin
HI	: Haemagglutination Inhibition
ICPI	: Intracerebral Pathogenicity Index
IU	: International Unit
IVPI	: Intravenous Pathogenicity Index
L	: Large (protein)
N	: Neuraminidase
ND	: Newcastle Disease
NDV	: Newcastle Disease Virus
NP	: Nucleoprotein
M	: Matrix (protein)
MDT	: Mean Death Time
mRNA	: Messenger RNA
OIE	: Office Internationales des Epizooties
PBS	: Phosphate Buffered Saline

PCR	: Polymerase Chain Reaction
RBC	: Red Blood Cell
RT-PCR	: Reverse Transcriptase-Polymerase Chain Reaction
RNA	: Ribonucleic Acid
SAN	: Specific Antibody Negative
SH	: Small Hydrophobic
SPF	: Specific Pathogen Free
P	: Phosphoprotein
vnNDV	: Velogenic Neurotropic Newcastle Disease Virus
vvNDV	: Velogenic Viscerotropic Newcastle Disease Virus