

MOLECULAR IDENTIFICATION OF NEWCASTLE DISEASE VIRUS FROM IPB-D2 CHICKEN WITH A SUDDEN DEATH OUTBREAK

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ABSTRACT

CHONG KAI XUAN. Molecular Identification of Newcastle Disease Virus from IPB-D2 Chicken with a Sudden Death Outbreak. Supervised by SRI MURTINI and NI LUH PUTU IKA MAYASARI.

Newcastle Disease (ND) is a highly contagious viral disease that can affect poultry. It can cause severe respiratory, digestive, and neurological symptoms that may lead to sudden death and major economic losses in the poultry industry. The aim of this study was to identify the cause of sudden death in IPB-D2 chicken through molecular detection of Newcastle Disease Virus (NDV). Samples were collected from the spleen and lung tissues of affected chickens and subjected to virus isolation, hemagglutination (HA) testing, and *Reverse Transcription Polymerase Chain Reaction* (RT-PCR). Virus isolation using 10 embryonated chicken eggs was performed, and all the embryos were dead. The HA test was positive in all samples, with HA titers ranging from 2^4 to 2^9 , indicating the presence of hemagglutinating virus particles. RT-PCR targeting the NDV fusion (F) gene yielded a specific amplification product of approximately 535 bp in all samples, confirming the presence of NDV genetic material. The results demonstrate that the sudden death outbreak in IPB-D2 chickens was associated with NDV infection.

Keywords: HA test, IPB-D2 chicken, NDV, RT-PCR, Virus isolation

ABSTRAK

CHONG KAI XUAN. Identifikasi Molekuler Virus Newcastle Disease dari Ayam IPB-D2 dengan Wabah Kematian Mendadak. Dibimbing oleh SRI MURTINI dan NI LUH PUTU IKA MAYASARI.

Newcastle Disease (ND) merupakan penyakit virus yang menyerang unggas dan sangat menular. Penyakit ini dapat menyebabkan gejala pernapasan, pencernaan, dan neurologis yang parah, dan dapat berujung pada kematian mendadak serta kerugian ekonomi besar dalam industri perunggasan. Penelitian ini bertujuan untuk mengidentifikasi penyebab kematian mendadak pada ayam IPB-D2 melalui deteksi molekuler Newcastle Disease Virus (NDV). Sampel dikumpulkan dari jaringan limpa dan paru-paru ayam yang baru mati, kemudian dilakukan isolasi virus, uji hemaglutinasi (HA), dan *Reverse Transcription Polymerase Chain Reaction* (RT-PCR). Isolasi virus menggunakan 10 telur ayam berembrio menunjukkan bahwa seluruh embrio mati. Uji HA menunjukkan hasil positif pada seluruh sampel, dengan titer HA berkisar antara 2^4 hingga 2^9 , yang mengindikasikan adanya partikel virus yang memiliki aktivitas hemaglutinasi. RT-PCR yang menargetkan gen fusion (F) NDV menghasilkan amplifikasi spesifik dengan ukuran sekitar 535 bp pada seluruh sampel. Hal ini menunjukkan keberadaan materi genetik pada NDV. Hasil penelitian ini menunjukkan bahwa wabah kematian mendadak pada ayam IPB-D2 berhubungan dengan infeksi NDV.

Kata kunci: Ayam IPB-D2, Isolasi virus, NDV, RT-PCR, Uji HA



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MOLECULAR IDENTIFICATION OF NEWCASTLE DISEASE VIRUS FROM IPB-D2 CHICKEN WITH A SUDDEN DEATH OUTBREAK

CHONG KAI XUAN

Undergraduate thesis
as one of the requirements to obtain a degree of
Bachelor of Veterinary Medicine
in the School of Veterinary Medicine and Biomedical Sciences

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PREFACE

The author expresses sincere gratitude for the guidance and support that enabled the completion of this research. The theme chosen for this research, conducted from November 2025 to March 2026, is the “Molecular Identification of Newcastle Disease Virus from IPB-D2 Chicken with a Sudden Death Outbreak”

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May this work be beneficial to those in need and contribute to the advancement of scientific knowledge.

Bogor, July 2026

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TABLE OF CONTENTS

LIST OF TABLES	xii
LIST OF FIGURES	xii
I INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	2
1.3 Objectives	2
1.4 Benefits	2
II LITERATURE REVIEW	3
2.1 IPB-D1 and IPB-D2 Chicken	3
2.2 Major viral disease causing sudden death in chickens	3
III METHODOLOGY	4
3.1 Time and Place	4
3.2 Tools and Materials	4
3.3 Procedure	4
3.3.1 Virus Isolation	4
3.3.2 Hemagglutination (HA) Test	4
3.3.3 RNA Extraction	5
3.3.4 Reverse Transcription Polymerase Chain Reaction (RT-PCR)	5
IV RESULTS AND DISCUSSION	7
4.1 Hemagglutination (HA) Test	7
4.2 Reverse Transcription Polymerase Chain Reaction (RT-PCR)	9
V CONCLUSION AND SUGGESTION	13
5.1 Conclusion	13
5.2 Suggestion	13
REFERENCES	14



LIST OF TABLES

1.	Hemagglutination (HA) titers of allantoic fluid samples	8
2.	RT-PCR results for NDV F gene detection	10

LIST OF FIGURES

1.	HA titer values of tested allantoic fluid samples. Hemagglutination (HA) titers value ranged from 24 to 29. Positive results will show a diffuse red layer. Negative results will show a red tear drops at the bottom. Lane N, negative control. Sample codes 1.1, 2.1, and 3.1 were obtained from lung tissue samples from three individual chickens each, while sample codes 1.2, 2.2, and 3.2 were obtained from spleen tissue samples from previous chickens.	7
2.	Agarose gel electrophoresis of RT-PCR products targeting the NDV F-gene. Lane M, DNA marker 100 bp. Lane 2, Non-Template Control (NTC). Lane 3, ND Sato positive control. Lane 4, ND LaSota positive control. Lane 5 until lane 10, RNA extracted from allantoic fluid of each sample. Sample codes 1.1, 2.1, and 3.1 were obtained from lung tissue samples from three individual chickens each, while sample codes 1.2, 2.2, and 3.2 were obtained from spleen tissue samples from previous chickens.	9