THESIS

BIOLOGICAL CHARACTERISTICS OF NEWCASTLE DISEASE VIRUS ISOLATED FROM NATIVE CHICKEN IN SURABAYA

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BIOLOGICAL CHARACTERISTICS OF NEWCASTLE DISEASE VIRUS ISOLATED FROM NATIVE CHICKEN IN SURABAYA

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Supervisor Co-Supervisor

DECLARATION

Hereby, I declare that in this thesis entitled:

BIOLOGICAL CHARACTERISTICS OF NEWCASTLE DISEASE VIRUS ISOLATED FROM NATIVE CHICKEN IN SURABAYA

There is no other work ever published to obtain a college degree in a particular college and according to my knowledge there is also no work or opinion ever written or published by others, except for those in writing referred to this paper and mentioned in the reference.

Surabaya, August 30th 2020

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Has been assessed at the Research Result Seminar

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SUMMARY

This research is entitled “Biological Characteristics of Newcastle Disease Virus Isolated From Native Chicken in Surabaya” and under the supervision of Dr. Maslichah Mafruchati, M.Si., drh as the main supervisor and Prof. Dr. Rahaju Ernawati M.Sc., drh as the co-supervisor.

Newcastle Disease Virus is regarded to be the most important and challenging disease in regards of poultry industry, with no exception in Indonesia. Altough all commercial chickens in Indonesia are routinely vaccinated with live Newcastle Disease Virus vaccines, ND continues to be a major problem for the poultry industry (Samal, 2011). Different strains of NDV worldwide have different pathotype. NDV has been categorized into five pathotypes based on clinical signs on infected chickens, designated; 1) viscerotropic velogenic, 2) neurotropic velogenic, 3) mesogenic, 4) lentogenic / respiratory, and 5) asymptomatic / enteric (OIE, 2013).

RT-PCR assays have been developed for the identification or characterization of NDV isolates by using primers that amplify portions of the genome related to a specific function (Alexander & Senne, 2008), but other than molecular assesment, biological characterization is different method to determine NDV pathotype that has been approved by OIE. The method include Mean Death Time (MDT), Intracrebral Pathogenicty Index (ICPI), and Intravenous Pathogenicity Index (IVPI) procedures. The primary methods such as MDT, ICPI, and IVPI for pathogenicity assessment cannot be neglected along with molecular method (WHO, 2002).

Three samples of native chicken isolates from previous isolation that has obtained positive HA and HI result were taken for further biological characterization test. The samples further labeled as ND/A1/2019, ND/A2/2019, and ND/A3/2019 passaged in SAN embryonated chicken eggs for the extraction of fresh alantoic fluid. These fresh alantoic fluid then diluted by certain dilution range with sterile PBS water to be further injected into 9-10 day old SAN embryonated chicken eggs for MDT assay, day old chicken (DOC) hatched from SAN flock for ICPI assay, and into 6 weeks old SAN chicken for IVPI assay.

After series of observation and calculation, all three isolates showed velogenic score in all MDT, ICPI, and IVPI assay. Sample ND/A1/2019 scored 45,6 for MDT, 1,76 for ICPI, and 2,74 for IVPI. Sample ND/A2/2019 scored 48 for MDT, 1,73 for ICPI, and 2,20 for IVPI. Sample ND/A3/2019 scored 57,6 for MDT, 1,75 for ICPI, and 2,07 for IVPI. Clinical sign showed in ICPI and IVPI birds varies among the sample group, but overall belong to the clinical sign of either viscerotropic velogenic or neurotropic velogenic group.