

**ABSTRACT****TRANSMISSION MODEL OF AVIAN INFLUENZA VIRUS H5N1 SUBTYPE BETWEEN SPECIES**

**Background and Objective:** Avian Influenza viruses are enveloped viruses that contain a segmented genome of eight different negative strand RNA molecules. The function of HA was to recognize sialic acid-containing receptors on the cell surface, meanwhile NA has function to release progeny virion from the receptors of cell host. PB2 has important role to determine host restriction. RNA viruses tend to mutate, and the type of mutation of avian influenza virus H5N1 subtype were: antigenic drift and antigenic shift. Antigenic drift caused by random mutations, mostly point mutations, antigenic shift results from gene reassortments when two different subtype viruses infect the same animal host. The purpose of this research was to analyze transmission models of H5N1 subtype avian influenza virus after the transmission to laboratory animals.

**Material and methods:** H5N1 avian influenza virus isolated from humans (virus code D4) were infected to chickens (*Gallus sp.*), monkeys (*Macaca fascicularis*) and ferret (*Mustella putorius*). Isolates virus from monkey infected to chicken. The isolates take from tracheal swabs (chickens), nasopharyngeal swab (monkeys), and nasalwash (ferret). Isolates from chickens inoculated in embryonated chicken eggs, isolates from monkeys and ferrets inoculated on MDCK cells. The allantoic fluids from embryonated chickens and the supernatant of MDCK cells subjected to HA test, the positive HA test subjected to RT-PCR for HA, NA and PB2. DNA from RT-PCR were subjected to nucleotide sequencing. The sequence of nucleotide were then subjected to analyze the prediction of amino acid, and then alignment the sequence of amino acid HA, NA and PB2 segments from the origin viruses with shedding viruses.

**Results:** Poultry and mammal induce mutation on 341 cleavage site and 220-loop of receptor binding domain of HA, mammals have role as carrier H5N1 AI virus, the virus not adapted in mammal and still have avian virus motive. Poultry and mammals caused mutation with kind of substitution amino acid of NA, but did not cause host restriction amino acid of PB2 mutation.

**Conclusions:** Mutation of 341 cleavage site and 220-loop receptor binding domain of HA avian influenza virus H5N1 was found from human after transmission to monkey, ferret and chicken animals model, substitution of NA amino acid avian influenza virus H5N1 from human after transmission to monkey, ferret and chicken animals model, but no mutation of PB2 host restriction amino acid avian influenza virus H5N1 from human after transmission to monkey, ferret and chicken animals model. No change of molecular characterization of H5N1 AI viruses from human after transmission to monkey, ferret and chicken animals model, and still have avian virus motive and not adapted in mammals.

**Keywords:** Avian Influenza H5N1 virus, transmission, mutation, poultry, mammals