MATHEMATICAL MODEL FOR THE TRANSMISSION OF AVIAN INFLUENZA BY AGE GROUP OF PATIENTS IN THAILAND

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ABSTRACT

Avian influenza is caused by influenza virus type A, which is called H5N1. In 2004, an epidemic was recognized as the first time in Thailand. After that, there were the reports of the sporadic outbreaks in all regions. This disease can be transmitted to human by birds. Human can be infected by direct contact from infectious animals by touching the phlegm or biological fluid contact with the feces of infectious animals. In this study, we take into account the age structure of avian influenza patients. We separated the population into two groups such as human and birds. Age structure of human population is separated into two classes; juvenile and adult human. The equations are constructed for each class. Standard dynamical modeling method is used for analyzing the behaviors of solutions. The stability conditions for the disease free equilibrium state and disease endemic equilibrium states are determined. The basic reproductive number is found. The numerical solutions are shown for supporting the theoretical results and we analyze method for controlling the transmission of avian influenza. The results of this study suggest the way for reducing the outbreak of this disease.

Keywords: Basis Reproductive Numbers, Disease Free Steady State, Endemic Steady State, Stability.