A Mathematical Model for Hepatitis B Virus Infection and the Impact of Vaccination on Its Dynamics

Authors : T. G. Kassem, A. K. Adunchezor, J. P. Chollom

Abstract : This paper describes a mathematical model developed to predict the dynamics of Hepatitis B virus (HBV) infection and to evaluate the potential impact of vaccination and treatment on its dynamics. We used a compartmental model expressed by a set of differential equations based on the characteristic of HBV transmission. With these, we find the threshold quantity R_0, then find the local asymptotic stability of disease free equilibrium and endemic equilibrium. Furthermore, we find the global stability of the disease free and endemic equilibrium.

Keywords : hepatitis B virus, epidemiology, vaccination, mathematical model