Mathematical analysis of a within host Ebola disease model

Abstract

Ebola virus disease (EVD), is a savere, often fatal disease in humans with very high mortality rate. Currently, there are neither licenced vaccines nor approved medication for the disease. In this study, a within host model of Ebola virus disease incorporating treatment as a control strategy has been formulated. Local and global stability analyses of the infection free, (IFE) and endemic equilibrium, (EE) points of the model have been done. It is shown that if the basic reproduction number Rw 0 < 1, the IFE is both locally and globally assymptotically stable and that when Rw 0 > 1, the disease persists in the population of the cells. The impact of treatment on the infection has also been established. The study indicates that a higher efficacy of treatment helps to tackle the disease within an individual.

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