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Stability analysis of an SEIQV epidemic model with saturated incidence rate. (English)

Zbl 1254.92083

Nonlinear Anal., Real World Appl. 13, No. 6, 2671-2679 (2012).

Summary: In this article, an SEIQV epidemic model with saturated incidence rate is considered. The basic reproduction number R_0 is found. If $R_0 \leq 1$, the disease-free equilibrium is globally asymptotically stable; if $R_0 > 1$, endemic equilibrium is globally asymptotically stable and the disease is persistent. Numerical simulations are carried out to illustrate the feasibility of the obtained results, especially the effect of vaccination to eliminate the disease.

MSC:

92D30 Epidemiology

34D20 Stability of solutions to ordinary differential equations

Keywords:

epidemic model; basic reproduction number; disease-free equilibrium; endemic equilibrium; stability

Full Text: DOI

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