Global Dynamics of a Within-Host Model for Usutu Virus

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In this work, we propose a within-host mathematical model for the Usutu virus with Crowley–Martin functional response. The basic reproduction number R0 is found by the next-generation matrix method. The model exhibits one or two equilibria, depending on the basic reproduction number. The local stability of the two equilibria is discussed using the Routz–Hurwitz criterion. Global stability is also established by constructing appropriate Lyapunov functions and using LaSalle's invariance principle. Numerical simulations are presented to illustrate the results.

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