

Bifurcation and Competitive Exclusion in a Malaria Model with Time Delay

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Abstract

We present a mathematical model of the transmission dynamics of two species of malaria with time lag. The model is equally applicable to two strains of the same malaria species. The reproduction number of the model is obtained and used as a threshold parameter to study the persistence or extinction of a species. Numerical simulations demonstrating bifurcation for prolonged delay values and competitive exclusion by the species with a larger reproduction number are provided.