

Dynamical analysis of Dengue and Chikungunya co-infection model

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This work is devoted to the study of transmission dynamics of Dengue (DEN) and Chikungunya (CHK) viruses in a population. The cases of CHK-DEN coinfection were reported in many countries and posed a serious threat to public health sector globally [1], [2]. Thus, a coinfection model has been developed and used to assess the impact of the spread of each disease on the overall transmission. The dynamical analyses for the CHK-only and DEN-only sub-models and the full (CHK-DEN) model revealed that the models undergo backward bifurcation when the corresponding associated reproduction number of the model is less than unity. Uncertainty and sensitivity analyses (of the parameters of the model) are carried out to, respectively, account for the effect of uncertainties and quantify the impact of the variations or sensitivity of each parameter of the model on the associated numerical simulations.

References

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