Local stability of dengue model using the fractional order system with different memory effect on the host and vector population

ABSTRACT

In this study, we formulate a fractional order dengue model by considering different order dynamics on human and mosquito population. The order of the differential equation is associated with the index of memory. Both human and mosquito carry a different value of order to showcase the different memory effect implies to each of them in the transmission process. Local stability of the equilibria is obtained based on the threshold parameter related to the basic reproduction number, denoted by R0. Finally, numerical simulations of the model are conducted to study the dynamical behavior of the system be used for the further study on hybridization of PALF and KF based phenolic composites.

Keyword: Dengue fever; Fractional; Local stability; Epidemiology