

Abstract

In this thesis, formulation of fractional models for Ebola virus disease (EVD) is made by exploiting different fractional derivatives, e.g., Caputo, Caputo-Fabrizio and Atangana-Baleanu in Caputo sense (ABC). Basic reproductive ratio R_o for classical model is computed by employing next generation matrix method. To analyze stability of corresponding model, DFE (disease free equilibrium) and EE (endemic equilibrium) points are calculated. Existence of unique solution for considered fractional models is proved by using Banach contraction principle. Comparative study is carried out by using fractional Euler method through MATLAB for different values of fractional parameter γ . Further, optimal control strategy of quarantine is applied to maximize the susceptible and minimize the infectious individuals.