Fractional Order Mathematical Modeling of COVID-19 Disease in Case of Wuhan China

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A B S T R A C T

The novel Covid-19 was identified in Wuhan, China in December 2019 and has created medical emergency world wise and distorted many lives in the couple of months, it is being burned challenging situation for the medical scientist and virologists. Fractional order derivative-based modeling is quite important to understand the real-world problems and to analyse realistic situation of the proposed model. In the present investigation a fractional model based on Caputo-Fabrizio fractional derivative has been developed for the transmission of CORONA VIRUS (COVID-19) in Wuhan, China. The existence and uniqueness solutions of the fractional order derivative has been investigated with the help of fixed-point theory. Adamas-Bashforth numerical scheme has been used in the numerical simulation of the Caputo-Fabrizio fractional order derivative. The analysis of susceptible population, exposed population, infected population, recovered population and concentration of the virus of COVID-19 in the surrounding environment with respect to time for different values of fractional order derivative has been shown by means of graph. The comparative analysis has also been performed from classical model and fractional model along with the certified experimental data.

Keywords: Infectious Diseases, Caputo-Fabrizio fractional order derivative, Numerical Simulation.

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