Keynote Talk: Modeling The Dynamics of Hepatitis C Virus with Combined Antiviral Drug Therapy - Interferon and Ribavirin

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A B S T R A C T

A mathematical modeling of hepatitis C virus (HCV) dynamics and antiviral therapy will be the highlight of the talk. The proposed model, which involves four coupled ordinary differential equations, describes the interaction of target cells (hepatocytes), infected cells, infectious virions, and non-infectious virions. The model takes into consideration the addition of ribavirin to interferon therapy and explains the dynamics regarding a biphasic and triphasic decline of viral load in the model. A critical drug efficacy parameter has been defined and it is shown that for an efficacy above this critical value, HCV is eradicated whereas for efficacy lower than this critical value, a new steady state for infectious virions is reached, which is lower than the previous steady-state value.

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