Abstract

We consider two models that describe the onset and course of a Hepatitis B infection, as well as how the body’s defenses self-regulate and fight off such an attack. First, we will develop a mathematical and biological vocabulary to define the major players and concepts in virus dynamics and how they interact with each other; such phenomena can often be paralleled to more well-known predator-prey systems. After constructing a system of ordinary differential equations, information about the system as a whole will be extracted and interpreted in terms of stability as the infection runs its course and the body responds. These theoretical results will be compared to experimental observations gathered from clinical studies that demonstrate that virus decay is not strictly exponential with treatment, and viral attacks can quickly resurge after treatment.