The Dynamic Behavior and Biological Interpretation: Mathematical Model of Cancer Cell Growth with Chemotherapy

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ABSTRACT

The development of mathematical biology in the spread of cancer cells with various modifications is very interesting to study. Naturally, the body produces immune cells to fight cancer cells. The immune components in this study were active CTL cells and helper T cells while chemotherapy is by administering drugs. Mathematically, the pattern of the spread of cancer cells can be modeled in the form of a differential equations system. So the purposes of this study were to determine the dynamic behavior and how biology interpretation in the mathematical model of the spread of cancer cells if given chemotherapy treatment. In particular, different from the existing model, in the formation of this model we will discuss CTL cell interactions that fight cancer cells using the Michaelis-Menten Equation. From the system formed equilibrium point was obtained and a dynamic analysis of the behavior of cell distribution with chemotherapy. From the analysis it is expected that the spread of cancer cells can be controlled by the rate of drug concentration in chemotherapy while maintaining immune cells.

Kata Kunci: *mathematical models, cancer cells, chemotherapy, Michaelis Menten*