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Analysis of global dynamics for HIV-infection of $CD4^+T$ cells and its treatment

Antiviral therapy for HIV-infected patients has greatly improved in recent years. Administration of drug combinations consisting of two or more different drugs can reduce and maintain virus load below detection level in many patients. Cyclic administration of the immune activator interleukin-2 (IL-2) in combination with highly active antiretroviral therapy (HAART) has been suggested as an effective strategy to realize long-term control of HIV replication *in vivo*. In this article, we formulate a mathematical model of the immune response for HIV-infected individual in the presence of HAART and IL-2. We look for the conditions under which the immune system recovers by applying IL-2 as an immune activator along with HAART. From the analytical point of view this means global stability of the disease-free equilibrium. Comprehensive numerical simulations are presented to illustrate the analytical results.

References

- [1] M. Bodzioch, M. Choiński, U. Foryś, *Analysis of global dynamics for HIV-infection of $CD4^+T$ cells and its treatment*, *Mathematica Applicanda* 46(1) (2018), 35–48, doi=10.14708/ma.v46i1.6369.