

**THE T4 CELL COUNT AS A MARKER OF HIV PROGRESSION IN  
THE ABSENCE OF ANY DEFENCE MECHANISM**

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**Abstract**

For a healthy adult, the T4 cell count is usually between 800 and 1200 per ml of blood but when the T4 cell count in a HIV infected individual drops (below 200 per ml of blood), the T4 cells are unable to mount an effective immune response against antigens (and any such foreign matters in the body) and consequently, the individual becomes susceptible to opportunistic infections and lymphomas. Accordingly, the T4 cell count can be considered a marker of disease progression in an infected individual and the loss of T4 cells accounts for a major part of the immunosuppressive effect of HIV. As such, we developed a stochastic catastrophe model to obtain the mean, variance and covariance of the uninfected, infected and lysed T4 cells. We also obtained the amount of toxin produced in a HIV infected person from the time of infection to the present time. And we presented a numerical illustration of the correlation structure between uninfected and infected T4 cells, and infected and lysed T4 cells

Keywords: HIV, T4 cells, toxin, stochastic catastrophe model.

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