

Title:**The pulse vaccination effects in mammary carcinoma: Mathematical Modeling****Abstract:**

The artificial immunity, realized through vaccinations, is nowadays a practice widely developed in order to eliminate cancer disease.

We present a mathematical model of the competition between immune system cells and mammary carcinogenesis under the effect of a vaccine (Triplex). The model describes both the humoral and cellular response of the immune system against cancer cells. The control of the cancer cells growth occurs through the application of the pulse vaccination.

We determine the relation between the strength of the vaccine and the time required to eradicate cancer cells, and we present some simulations to illustrate our theoretical result, namely, the total depletion of cancer cells influenced by competition occurs among the immune system cells and cancer cells.

Keywords:

Nonlinear ODE, Immune system, Mammary Carcinoma, Pulse vaccination.

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