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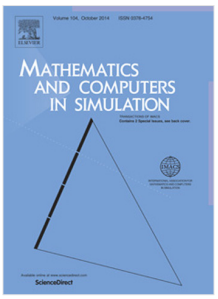

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ACCEPTED MANUSCRIPT

A viscous modified Gompertz model for the analysis of the kinetics of tumors under electrochemical therapy[☆]

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Abstract

Knowledge of tumor growth kinetics constitutes a challenge for researchers. Different models have been used to describe data of unperturbed and perturbed tumors. The modified Gompertz equation had been proposed to describe diverse responses of direct current treated tumors (disease progression, stable disease, partial response and complete response). Nevertheless, diffusion processes involved in the tumor growth are not integrated in this equation. This paper analyzes the viscous modified Gompertz equation. It is shown that for certain input parameters the corresponding solutions decrease exponentially in appropriate time intervals.

Keywords: Diffusion process, modified Gompertz equation, tumor, electrochemical therapy
2010 MSC: 35Q92, 76R50, 92C17, 92C45

Highlights:

- New model that includes a diffusion term in the modified Gompertz equation.
- New model that allows us to simulate the evolution of mass, volume and density of tumors under electrochemical therapy.

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