



Instituto Universitario de Investigación  
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# Conferencia

por

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título

**"New formulation of the Gompertz equation to describe the kinetics of untreated tumors"**

## **Abstract**

Different equations have been used to describe and understand the growth kinetics of undisturbed malignant solid tumors. The aim of this paper is to propose a new formulation of the Gompertz equation in terms of different parameters of a malignant tumor: the intrinsic growth rate, the deceleration factor, the apoptosis rate, the number of cells corresponding to the tumor latency time, and the fractal dimensions of the tumor and its contour. Furthermore, different formulations of the Gompertz equation are used to fit experimental data of the Ehrlich and fibrosarcoma Sa-37 tumors that grow in male BALB/c/Cenp mice. The parameters of each equation are obtained from these fittings. The new formulation of the Gompertz equation reveals that the initial number of cancerous cells in the conventional Gompertz equation is not a constant but a parameter that depends nonlinearly on time and the tumor deceleration factor. In turn, this deceleration factor depends on the apoptosis rate of tumor cells and the fractal dimensions of the tumor and its irregular contour. It is concluded that this new formulation has two parameters that are directly estimated from the experiment, describes well the growth kinetics of unperturbed Ehrlich and fibrosarcoma Sa-37 tumors, and confirms the fractal nature of the Gompertz equation and the fractal property of tumors.

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