

Fractal-like kinetics, a possible link between preconditioning and sepsis immunodepression. On the chemical basis of innate immunity

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In a recent paper the authors hypothesized that the so called fractal-like enzyme kinetics of intracellular reactions may explain the preconditioning effect in biology (Vasilescu C, Olteanu M, Flondor P, Revue Roumaine de Chimie. 2011; 56(7): 751-7). Inside cells the reaction kinetics is very well described by fractal-like kinetics. In the present work some clinical implications of this model are analyzed. Endotoxin tolerance is a particular case of preconditioning and shows similarities with the immunodepression seen in some sepsis patients. This idea offers a theoretical support for modulation of the enzymatic activity of the cell by changing the fractal dimension of the cytoskeleton.

Key words: fractal-like kinetics, preconditioning, endotoxin tolerance, sepsis, innate immunity, fractals

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