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Cellular defensive mechanisms of an organism's reparation as the one of mechanisms maintenance stability Internal Energy of an organism

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Abstract

The process healing wound of surgical sterile matched incision occurs via following mechanism.

It occurs the mechanism tissue regeneration from the purpose of view of chemistry using Theorell formula: dn/dt = -UcA dμ/dx; [dn/dt – quantity of diffusing substance molecules within the unit time; U – substance mobility; c – substance concentration; A – membrane area; μ – chemical potential; x – molecule distance from membrane]. Chemical potential (μ) is that the driving mechanism for both active and passive transports substances across cellular membranes. Taking under consideration , that cells of an equivalent layer of any tissue comprise approximately identical substances concentration (c), having identical mobility (U), identical area of cellular membranes (A), identical molecule distance from the cell wall (x), it's occurred the absence of mechanism substance diffusion (dn/dt) through the cellular membranes thanks to the circumferential cell contact with the opposite cells by the identical chemical potentials (μ1 = μ2 = μ3 etc.). Besides identical chemical potentials of all cells decrease cells' cellular membranes permeability that decrease of substance diffusion through the cellular membranes (dn/dt=0). Therefore cells aren't crammed with substances thanks to identical chemical potentials of intracellular Medium and extracellular Medium each cell, and it takes place "contact cellular inhibition of cells' divission remaining cells within the quiescent G0 phase of cellular cycle. The a part of cellular membrane free from the cellular contact separates the cellular chemical potential from another Environmental chemical potential (μcell ≠μenvironment) in wound of surgical sterile incision, i.e. the various chemical potentials of intracellular Medium and extracellular Medium of cell. Therefore the phenomenon "contact inhibition of cell is absent" that promotes the rise of cellular membranes permeability and therefore the increase of substance diffusion (dn/dt) through cellular membranes filling G0 phase of cellular cycle. It exerts proliferative processes of cells division impelling the mechanism of tissue's regeneration leading to healing sterile wound of matched incision via development cellular cycle causing proliferative processes of healing wound by primary intention. Thus these cellular processes maintain stability Internal Energy of an organism.

Biography

M. Ponizovskiy is currently working at Manager of toxicological Kiev regional hospital Kiev, Ukraine. M. Ponizovskiy is serving as an honorary reviewer for Journal of Molecular and Genetic Medicine and has authored of several research articles/books related to Thermodynamics of a human organism in norm and pathology; Biochemical and Biophysical metabolic mechanisms in a human organism and in cells of an organism in norm; Biochemical and Biophysical metabolic mechanisms in a human organism and in cells of an organism in pathology, especially cancer pathology.

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