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RADIATION ADAPTIVE RESPONSE PHENOMENON AND INDIVIDUAL RADIOSENSITIVITY

Abstract

The radiation adaptive response is a biophysical phenomenon which may appear in organisms irradiated by low doses of ionizing radiation. This effect stimulates natural mechanisms responsible for antioxidants, apoptosis, immune system, and DNA repair processes, reducing the risk of neoplastic (cancer) transformation of irradiated cell(s) in the organism. There are many ways in which the adaptive response can be presented. The easiest way for experimenters is when the adaptive response is associated with a small priming radiation dose that reduces a significant portion of the detrimental effects of a higher challenging dose; this is called the priming dose effect (or Yonezawa effect).

This presentation is focused on the broad biophysical model of the radiation adaptive response which allows to predict the behaviour of the irradiated organism based on its individual radiosensitivity level. This approach can be very useful in medical examinations of the candidates to astronauts to verify their susceptibility to cosmic radiation.

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