

Investigation of the mechanisms of photomodulation of mitochondrial cytochrome *c* oxidase under the action of low-dose blue light (450 nm) irradiation

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Abstract

The aim of this work is to study the mechanisms of photobiomodulating action of LED irradiation on mitochondrial activity. It has been established that irradiation of mitochondria of the liver of Japanese quail *Coturnix japonica* with blue LED light (450 nm) or red LED light (630 nm) at doses of 0.5-2.5 J/cm² leads to a 12% increase in the level of cytochrome *c* oxidase activity. Spectral characteristics of emission and excitation of fluorescence of a mitochondrial suspension are obtained. It has been suggested that protoporphyrins and FAD-dependent dehydrogenases of the mitochondrial respiratory chain are the most likely targets of irradiation leading to a modulating effect on cytochrome *c* oxidase. A possible scheme of the modulating effect of light on mitochondrial activity is proposed.

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