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Aug 03, 2016 · Interplay between up-regulation of **cytochrome-c-oxidase** and hemoglobin oxygenation induced by near-infrared laser Xinlong Wang , 1, * Fenghua Tian , 1, * Sagar S. Soni , 1 F. Gonzalez-Lima , a, 2 and Hanli Liu b, 1

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Publish Year: 2016

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Within the wavelength spectrum of approximately 620–1100 nm, the light absorption by **tissue chromophores** is weak. 7 The primary mechanism of **photobiomodulation** rests on photon absorption by **cytochrome c oxidase (CCO)**, 8 which is the terminal enzyme in the mitochondrial respiratory chain that plays a key role in neuronal oxygen utilization for energy metabolism. 9 The greater the **oxidized CCO increases**, the greater **oxygen consumption** ...

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Publish Year: 2016

Name of Journal: *World Journal of Biological Chemistry*

Manuscript NO: 56088

Manuscript Type: OPINION REVIEW

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Kadenbach B. Regulation of cytochrome c oxidase

Bernhard Kadenbach

Abstract

The generation of cellular energy in form of ATP occurs mainly in mitochondria by oxidative phosphorylation. Cytochrome c oxidase (CytOx), the oxygen accepting and rate-limiting step of the respiratory chain, regulates the supply of variable ATP demands in cells by the "allosteric ATP-inhibition of CytOx". This mechanism is based on inhibition of oxygen uptake of CytOx at high ATP/ADP ratios and low ferrocytochrome c concentrations in the mitochondrial matrix *via* cooperative interaction of the two substrate binding sites in dimeric CytOx. The mechanism keeps mitochondrial membrane potential $\Delta\Psi_m$ and ROS formation at

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<https://iubmb.onlinelibrary.wiley.com/doi/full/10.1002/iub.86>

Cytochrome c oxidase (COX) or complex IV of the **mitochondrial respiratory chain** plays a fundamental role in energy production of aerobic cells. This multimeric enzyme of the inner mitochondrial membrane catalyzes the last step of respiration, the transfer of electrons from **cytochrome c to molecular oxygen**.

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Aug 03, 2016 · Kolyva, C. et al. **Cytochrome c oxidase** response to changes in cerebral oxygen delivery in the adult brain shows higher brain-specificity than haemoglobin. *NeuroImage* 85 Pt 1,