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Light stimulation of mitochondria reduces blood glucose levels

Michael B Powner [1], Glen Jeffery [2]

Affiliations

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Abstract

Mitochondria regulate metabolism, but solar light influences its rate. Photobiomodulation (PBM) with red light (670 nm) increases mitochondrial membrane potentials and adenosine triphosphate production and may increase glucose demand. Here we show, with a glucose tolerance test, that PBM of normal subjects significantly reduces blood sugar levels. A 15 min exposure to 670 nm light reduced the degree of blood glucose elevation following glucose intake by 27.7%, integrated over 2 h after the glucose challenge. Maximum glucose spiking was reduced by 7.5%. Consequently, PBM with 670 nm light can be used to reduce blood glucose spikes following meals. This intervention may reduce damaging fluctuations of blood glucose on the body.

Keywords: 670 nm; glucose; human; mitochondria; oral glucose tolerance test; photobiomodulation; red light.

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