

Protective Effect of Green Light Against the Deleterious Effects of UV Irradiation on Cellular Systems

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ABSTRACT

A different type of experimental set-up is developed, in which cellular systems irradiated with ultraviolet (UV) light are protected through a simultaneous irradiation with high density green photons. The noxious UV-effects and their protection by green light (GL) are investigated on *Saccharomyces cerevisiae* (Sc) – cells, cultivated and measured under rigorous conditions. A series of physical determinations, atomic force microscopy, impedance spectroscopy and circular dichroism, revealed that the alterations induced by UV in the cellular culture were clearly reduced through the simultaneous GL irradiation. The biochemical activities of superoxide dismutase and catalase that “scavenge” free radicals in eukaryotic cells, severely damaged by UV, were almost completely restored by a previously protected GL- irradiation. The free radicals inhibition by high density photons, in the green band of visible spectrum, as a first revealed antioxidant effect of electromagnetic (EMF)-field, is analyzed in the context of a suggested tentative physical model.

Key words: free radicals, green light irradiation, protein polarization