Effects of near-infrared laser radiation on the survival and inflammatory potential of *Candida* spp. involved in the pathogenesis of chemotherapy-induced oral mucositis

A. M. Clemente¹ · L. Rizzetto² · G. Castronovo³ · E. Perissi³ · M. Tanturli³ · F. Cozzolino³ · D. Calvalieri² · F. Fusì⁴ · F. Cialdai⁵ · L. Vignali⁵ · M. G. Torcia¹ · M. Monici⁵

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**Abstract** *Candida* spp. usually colonize ulcerative lesions of atrophic mucosa in patients with chemotherapy-induced oral mucositis inducing severe inflammation. The spread of antifungal-resistant strains strongly encouraged the search of complementary or alternative therapeutic strategies to cure inflamed mucosa. In this paper, we studied the effects of a near-infrared (NIR) laser system with dual-wavelength emission (808 nm, 904 nm) on the survival and inflammatory potential of *C. albicans*, *C. glabrata*, and *C. parapsilosis*. Laser treatment was performed with a Multiwave Locked System laser. Survival and apoptosis of fungal strains were evaluated by colony-forming units (CFU) counting and annexin V staining. Cytokine production was evaluated by ImmunoPlex array. Laser treatment significantly affected the survival of *Candida* spp. by inducing apoptosis and induced a lower production of inflammatory cytokines by dendritic cells compared to untreated fungi. No differences in the survival and inflammatory potential were recorded in treated or untreated *Saccharomyces cerevisiae* cells, used as the control non-pathogenic microorganism. Laser treatment altered the survival and inflammatory potential of pathogenic *Candida* spp. These data provide experimental support to the use of NIR laser radiation as a co-adjutant of antifungal therapy in patients with oral mucositis (OM) complicated by *Candida* infections.

A. M. Clemente and L. Rizzetto contributed equally to this work.

✉ M. G. Torcia
torcia@unifi.it

¹ Department of Clinical and Experimental Medicine, University of Firenze, Firenze, FI, Italy
² Research and Innovation Centre, Fondazione Edmund Mach, San Michele all’Adige, TN, Italy
³ Department of Experimental and Clinical Biomedical Sciences, University of Firenze, Firenze, FI, Italy
⁴ Medical Physics Unit, Department of Experimental and Clinical Biomedical Sciences, University of Firenze, Firenze, FI, Italy
⁵ ASAcampus Joint Laboratory, ASA Research Division, Department of Experimental and Clinical Biomedical Sciences, University of Firenze, Firenze, FI, Italy

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