

# PRODUCTION OF FUNGICIDAL PRODUCTS BY *Paracoccidioides brasiliensis*-STIMULATED NEUTROPHILS INCREASES AND IL-10 SECRETION DECREASES AFTER TREATMENT WITH LOW LEVEL LASER IN A MODEL OF ACUTE INFECTION

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**Introduction:** The modulating effect of Low level laser therapy (LLLT) on neutrophils was already demonstrated in experimental paracoccidioidomycosis (PCM); but it is necessary to better understand the mechanisms involved in this process. **Materials and Methods:** We evaluated the effects of LLLT (power: 100 mW; wavelength: 808 nm; energy density: 35. J/cm<sup>2</sup>; 10 seconds/point) applied *in vivo* on alternate days at two points on each hind paw of mice, aiming the bone-marrow. Mice were infected in the subcutaneous air pouch with either the virulent (Pb18) or avirulent (Pb265) *P. brasiliensis* isolate. Unirradiated animals were used as controls. After 8 days of infection the cells from the air pouch were collected and counted and analyzed for protein concentration and release of reactive oxygen species (ROS), mitochondrial activity of PMN and migration profile and secretion of cytokines (IL-12, IFN- $\gamma$ , GM-CSF, IL-17, IL-4 and IL-10) by the cells present in the exsudate. **Discussion of Results:** Pb18-infected LLLT-treated animals showed increased mitochondrial activity, protein content and release of ROS by PMN and also decrease in secretion of IL-10 by exudate cells. Infection with Pb265 also led to an increase in mitochondrial activity, but a decrease in protein concentration was observed and the release of ROS was similar to that of unirradiated controls. No differences were observed in LLLT-treated mice and their controls in the secretion of the IL-12, IFN- $\gamma$ , GM-CSF, IL-17 and IL-4 cytokines by exudate cells stimulated by either fungal isolate. Regarding cell migration, to the subcutaneous air pouch, PMN were the main cell type found at the inoculum site (70%), followed by lymphocytes and monocytes. The number of PMN decreased after treatment with LLLT when the stimulus was Pb18 and increased when it was Pb265. The number of lymphocytes increased in the group stimulated with LLLT and infected with Pb18 and decreased when the stimulus was Pb265. Monocytes number were not altered in LLLT-treated mice and in their controls when the stimulus was Pb18 and when the stimulus was Pb265 a decrease was observed in the group treated with LLLT. **Conclusion:** Our results suggest that treatment with LLLT elicits an activation and increased production of fungicidal products by PMN, especially ROS, and decreased secretion of IL-10 by exudate cells when stimulated with a virulent Pb isolate whereas infection with a avirulent isolate result only in increase of mitochondrial activity.

**Key words:** Neutrophils. Low level laser therapy. *P. brasiliensis*

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