

## **EFFECTS OF LOW-LEVEL LASER THERAPY ON ADHESION AND PROLIFERATION OF A549 EPITHELIAL CELLS IN DECELLULARIZED LUNG**

**Renata da Palma, Flávia Mafra de Lima, Ramon Farre, Neus Câmara, Luiz Oliveira**

*UNINOVE, São Paulo, Brazil; UNIFESP, São Paulo, Brazil; Barcelona University, Barcelona, Spain*

**Background:** Currently lung bioengineering has been show a potential alternative therapeutic for lung transplantation of patients with end-stage lung disease. This promising alternative therapeutic strategy consists in recellularization of lung Scaffold. It is well known the ability of low-level laser therapy (LLLT) in modulate and differentiate cell types. Therefore, the aim of this study was investigated the recellularization in lung scaffolds submitted to treatment with LLLT in order to enhance adhesion and proliferation of the reseeded cells.

**Study:** Decellularized slices lung obtained from male C57/BL6 were cultured with lung epithelial cells A549 and treated for 7 days with LLLT 660 nm twice per day. At the end of protocol the scaffold from the lung was analyzed for your ability to support growth and differentiation of cells treated with LLT. Analyzes of histological, qPCR and MTT assay were performed.

**Results:** In mRNA expression of some markers related to epithelial cell-adhesion the treatment with LLLT shown to be a stimulator of proliferation and cell adhesion when compared to control group in the following molecules: ICAM-1, ICAM-2, VCAM, MCP-1. In the MTT assay, where we can observe the effect of LLLT on cell proliferation and death of lung epithelial cells, we observed that LLLT group increased the number of viable epithelial cells compared to the untreated control group. In addition, we observed that the group treated with LLLT reduces cell death compared to control, showing that LLLT can be a facilitator on the cell adhesion process in decellularized organs

**Conclusion:** The low-level laser therapy was effective in enhance the proliferation and adhesion of lung epithelial cells in scaffold lung. Therefore, the LLLT proves to be an important tool in lung recellularization process increased the feasibility of future lung transplantation