**PHOTOBIOMODULATION THERAPY REGULATES THE PRODUCTION OF REACTIVE OXYGEN SPECIES (ROS) IN AN EXPERIMENTAL MODEL OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)**

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**Abstract:**

The immunopathology of COPD is a crossover and complex conversation between inflammatory and structural cells that trigger both cell migration and airway remodeling, with clinical consequences of irreversible airflow limitation and respiratory symptoms. This process is likely triggered by various components of tobacco smoke. Thus, the study of photobiomodulation in chronic obstructive pulmonary disease can become a successful reality for the treatment of patients with the disease. In this sense, the aim of this work is to evaluate whether photobiomodulation therapy regulates pulmonary inflammation via reactive oxygen species (ROS) in an experimental model of COPD.The COPD induction protocol was performed by applying orotracheal smoke cigarette extract, 1 application of the extract, twice a week for 6 weeks and euthanasia performed 24 hours after the last application. After 3 weeks of exposure to cigarette extract, the COPD animals underwent low-intensity laser therapy (LLL) for 3 weeks, with different doses of energy (1J/cm2, 5J/cm2 and 7.5J/cm2) at low level laser. In this context, we evaluated the presence of inflammatory cells in the bronchoalveolar lavage (BAL), in the blood and lungs of animals. In addition to necrosis and apoptosis cells as well as ROS in the lung. Our data indicated an increase in the number of macrophages, neutrophils and lymphocytes in BAL and lung of animals with COPD, on the other hand, laser with 1J/cm2 and 5J/cm2 reduced the number of cells in BAL, whereas the dose of 7.5J/cm2 no show differences in cell migration to the lung. We also found a reduction in pulmonary ROS and BAL ATP after laser therapy (1J/cm2 and 5J/cm2). With these results, we can suggest that photobiomodulation acts on the pulmonary inflammation observed in COPD via regulation of ROS production.

**Biography:**

Graduated in Biomedicine from Universidade Nove de Julho - UNINOVE (2014 -2017), and with specialization in Clinical Analysis (2014-2017) from UNINOVE, she did a scientific initiation in Biophotonics applied to Health Sciences from UNINOVE (2016- 2018), about effects of photobiomodulation therapy on lung inflammation in an experimental model of Chronic Obstructive Pulmonary Disease (COPD), with a scholarship from the São Paulo institution for research promotion (FAPESP). She is currently pursuing a master's degree at UNINOVE, where she will study the effect of photobiomodulation therapy on COPD patients (2021). She works in the field of Photobiomodulation and Pulmonary Immunology, mainly with experimental models of COPD, asthma, pulmonary fibrosis and involvement of epithelial cells, fibroblasts and pneumocytes in lung diseases.