

## **Effect of photobiomodulation and its combination with corticosteroid in an experimental model of chronic pulmonary inflammation**

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### **Abstract:**

Asthma is characterized by chronic inflammation of the airways, reversible airflow obstruction, and airway hyperresponsiveness. Common treatment is performed with the use of a corticosteroid such as Fluticasone (FT). photobiomodulation (PBM) is relatively new, inexpensive, with no side effects and demonstrates effectiveness in reducing inflammatory parameters. We aimed to evaluate the effects of PBM and its combination with FT in asthma. The Balb/C mice were divided into groups: controls, FT, PBM, OVA, OVA+PBM, OVA+FT and OVA+PBM+FT. We induced inflammation by sensitization with ovalbumin - OVA and orotracheal challenge from day 21. We treated with FT (100 µg/kg - intranasal) one hour before challenge with OVA, and one hour after the challenge we applied PBM - laser diode (660nm, 30mW and 3J/cm<sup>2</sup>) at three distinct points. Twenty-four hours after the last treatment, the animals were anesthetized for collection of bronchoalveolar lavage (BAL) and lungs. The data were submitted to the One-way ANOVA test followed by the Newman-Keuls test. Significance levels adjusted to 5% (p<0.05). We observed a reduction in the total number of cells in BAL, in macrophages, with best result in OVA+LLL, lymphocytes, with greater reduction in the groups associated to the laser, neutrophils and eosinophils. Reduction of production of cytokines IL-4, IL-5, IL-1β, TNF-α and IL13, where the laser treated groups showed better results, increased the level of the IL-10, presenting better results in the groups treated with FT. There was reduction in collagen fiber deposition and mucus production in the airways.

### **Biography:**

Cristiano Rodrigo de Alvarenga Nascimento graduated in medicine at the federal university of Juiz de Fora, the same college where he completed his medical residency in Pulmonology. Specialist in Pulmonology and intensive care and with an MBA from Fundação Instituto de Administração, Universidade de São Paulo. In 2016, he founded the Prevent Senior Institute for the eponymous institution, with a focus on research in the field of cell therapy, and created the medical residency of that institute, an important training program for specialist doctors. In 2018 joined the doctoral program at Nove de Julho University, with a focus on biophotonics applied to health sciences. His main interests are photobiomodulation and stem cells.