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Title: Low power laser (LBP) therapy downregulates the allergic lung inflammation in experimental asthma model: Effect driven to signal transducer and activator of transduction 6 (STAT-6)

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Body: Introduction: Asthma has a high prevalence and a high economic and social cost. Thus, therapies that attenuate lung inflammation as well as discomfort of the patient in asthma are of great interest. Therapy with Low Power Laser (LBP) is a relatively new effective therapy, with very low cost and no side effects and has been found to produce anti-inflammatory effects in a variety of disorders. Aim: To investigate the effect of laser in the treatment of pulmonary inflammation induced by ovalbumin (OVA) in mice. Methods: The protocol used for the induction of experimental asthma will be administered OVA subcutaneously adsorbed in alum (days 0 and 14) and intranasal OVA (days 21 and 28). On days 22 (OVA), the animals was sacrificed and the analysis of lung inflammation was measured by the following markers: inflammatory cells, adhesion molecule (ICAM-1), mucus production, collagen synthesis, cytokines (IL-4, IL-5, IL-13) and eotaxin. The LBP 660 nm diode laser was administred after the antigenic challenge (3 times, 3h/3h) with a dose of 7.5 J during 3 minutes. Yet, the participation of the transcription factors STAT6 and IgE levels were evaluated. Results: The reduction of number of cells (eosinophils) post LBP therapy coincides with decreasing of ICAM-1 expression and Th2 cytokines levels. The STAT6 concentration in lung from challenged rats was also diminished after laser treatment; otherwise, LBP does not work on IgE in serum. Conclusions: Therefore, our results demonstrated that LBP Therapy reduces the lung inflammation on asthma model probably via STAT6. Support Financial: UNINOVE, FAPESP and CNPq.