

## Effect of low-level laser therapy on allergic asthma in rats

### Abstract

Asthma is a complex chronic inflammatory disease of the airways that involves the activation of many inflammatory and other types of cells. We investigated the effect of low-level laser therapy (LLLT) on allergic asthma in rats and compared its effect with that of the glucocorticoid budesonide. Asthma was induced by challenge and repeated exposure to ovalbumin. Asthmatic rats were then treated with LLLT or budesonide suspension. LLLT at 8 J/cm<sup>2</sup> once daily for 21 days could relieve pathological damage and airway inflammation in asthmatic rats. LLLT could decrease the total numbers of cells and eosinophils in bronchoalveolar lavage fluid. LLLT could reduce levels of IL-4 and increase IFN- $\gamma$  levels in bronchoalveolar lavage fluid and serum, meanwhile reduce serum IgE levels. Flow cytometry assay showed that LLLT can regulate the Th1/Th2 imbalance of asthmatic rats. LLLT had a similar effect to that of budesonide. These findings suggest that the mechanism of LLLT treatment of asthma is by adjustment of Th1/Th2 imbalance. Thus, LLLT could take over some of the effects of budesonide for the treatment of asthma, thereby reducing some of the side effects of budesonide.

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