



## **Low Level Laser Therapy & Respiratory clinical research**

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### **Low power laser biostimulation in the treatment of bronchial asthma**

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**INTRODUCTION:** Modern concept of acupuncture is based on the fact there are designated locations on the surface of human body, which are related to integrative systems of an organism by means of sensory nerves, correlating and synchronizing organ functioning, depending on external and internal conditions, by means of nervous and neurohumoral regulation of metabolic and regenerative processes, including also mobilisation of immunological, protective and anti-stress reactions. Apart from standard needle acupuncture, other methods of stimulating acupuncture points are also applied. Due to invention of low power lasers, irradiation laser acupuncture has been introduced into routine medical practice, characterised by painless and aseptic technique and outstanding clinical results.

**MATERIAL AND METHODS:** The investigation was aimed at defining therapeutic effects of low power laser irradiation by stimulating acupuncture points or local treatment of asthma. A prospective analysis included 50 patients treated at the Institute of Pulmonary Diseases in Sremska Kamenica during 2000, 2001 and 2002. Together with conservative treatment of present disease, these patients were treated with laser stimulation of acupuncture points in duration of ten days. During treatment changes of functional respiratory parameters were recorded. Results were compared with those in the control group. The control group consisted of the same number of patients and differed from the examination group only by not using laser stimulation. **RESULTS:** Patients with bronchial asthma presented with significant improvement ( $p < 0.0005$ ) of all estimated lung function parameters just 30 minutes after laser stimulation. Improvements achieved on the third and the tenth day of treatment were significantly higher ( $p < 0.001$  to  $p < 0.00005$ ) in the examination group in comparison with the control group. Further investigation confirmed that improvement of measured lung function parameters was significantly higher in younger patients, in patients whose disease lasted shorter, as well as in women. Patients with asthma, who were treated every three months for a one year period, presented with significantly lower frequency and intensity of attacks. **DISCUSSION:** The mechanism of laser stimulation activity in treatment of bronchial asthma is explained in detail, correlating our results to those obtained by other authors. **CONCLUSIONS:** A ten-day course of low-power laser stimulation of acupuncture points in patients with bronchial asthma improves both the lung function and gas exchange parameters. Positive effects of laser treatment in

patients with bronchial asthma are achieved in a short time and they last long, for several weeks, even months. Successive laser stimulation in asthmatics prolongs periods of remission and decreases the severity of asthmatic attacks. Better positive effects of laser stimulation are achieved in younger asthmatics, in those with shorter disease history and in female patients. There is a negative correlation between effects of laser stimulation and patients' age and disease history. However, these characteristics do not affect response rate and speed but positive laser stimulation effects are achieved in a shorter period in female asthmatics. Ter Arkh. 2002;74(3):25-8.

### **Efficacy of low intensity laser irradiation and sodium nedocromil in the complex treatment of patients with bronchial asthma**

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AIM: To study efficiency of low-intensity laser radiation (LILR) and sodium nedokromil (tailed) in combined treatment of bronchial asthma (BA). MATERIAL AND METHODS: The choice of the treatment depended on the activity of bronchial inflammation and the presence of contraindications. Laser was used on the skin in the area of the lung and great vessels projection, endobronchially. Tailed was given in inhalations and irrigations of the tracheobronchial tree during therapeutic fibrobronchoscopy. These methods were used in combined treatment of 220 BA patients. RESULTS: Combined use of LILR and tailed proved highly effective and safe in BA. Cytological markers of cell reactions of the bronchopulmonary system on the action of LILR were revealed. CONCLUSION: Availability, good reproducibility, cost-effect efficacy and safety make LILR one of the most beneficial nonpharmacological treatments for bronchial asthma.

### **The treatment of bronchial asthma with LLLT in attack-free period in children.**

Ailioaie C, Ailioaie L.

98 patient aged 10-18 years, diagnosed with moderate or severe asthma were divided into three groups. -Group 1: 35 patients received laser acupuncture using extrameridian acupuncture points plus scanning. Lasers used were 670 and 830 nm, 50 and 200 mW respectively, in continuous mode. Treatment was given twice daily 10 days per month, 3 months in total. No other therapy was given. -Group 2: 33 patients inhaled Salmeterol xinofoat 2 x 25, twice daily for 3 months. -Group 3: 30 patients were treated with Theophylline retard 15 mg/kg every 12 hr for 3 months. Results: A noticeable improvement in the clinical, functional and immunological characteristics were observed in 83% of the patients in group 1, 70 in group 2 and 53 in group 3. There were no side effects in the laser group.

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