

European Respiratory Society Annual Congress 2012

Abstract Number: 1711

Publication Number: P1064

Abstract Group: 6.3. Tobacco, Smoking Control and Health Education

Keyword 1: COPD - mechanism **Keyword 2:** Animal models **Keyword 3:** Smoking

Title: The influence of infrared radiation on the level of spontaneous cytokines in the treatment of experimental COPD

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Body: Aim: to study the effect of infrared radiation (IR) on the level of spontaneous pro- and anti-inflammatory cytokines in the treatment of experimental COPD (eCOPD). Methods: The model of COPD was reproduced in 45 albino rats by inhalation of tobacco smoke during two months in a special chamber. Phototherapy was carried out by IR using light of GI, KL, ZB lamps with a ceramic coating. Length of procedures were for 5 minutes the first 5 days and 10 minutes the next 5 days. Studies of cytokines in 20 intact rats and in the rats with eCOPD was performed before treatment, after 10 procedures and 30 days after treatment. Determination of cytokines in the serum was performed by enzyme immunoassay. Results: Animals with eCOPD after treatment in compare with untreated rats had reduction of the spontaneous pro- and anti-inflammatory cytokines. Thus, compared with the original data content of the IL-1 was reduced by almost 1.5, IL-6 - by 1.7, TNF - by 1.4 times and levels of IL-10 - by 1.1 times. However, compared with the control of spontaneous levels of cytokines IL-1, IL-6, TNF remained elevated by 12.7, 41.4 and 40.6 times, respectively, whereas IL-10 - only by 2.64 times. Within 30 days after the action of infrared radiation, compared with the control, the levels of cytokines, although decreased, but remained elevated at 11.2, 33.0 and 36.2 times and the level of IL-10 remained elevated 2.48-fold. The differences were statistically significant ($p < 0.05$), except for changes of IL-10 in the process of therapy. Conclusion: the phototherapy by IR has a marked significant decrease in levels of proinflammatory cytokines in eCOPD, without changing the level of anti-inflammatory IL-10.