Abstract

Respiratory system of the cystic fibrosis patients is affected by the defect in gene coding for protein transporter for chloride ions – CFTR ("Cystic fibrosis transmembrane conductance regulator"). The main complication of this disease is airways chronic inflammation, in particular caused by bacterium *Pseudomonas aeruginosa*. Due to asialylation of the lung surfaces the bacterial adhesion is facilitated, for example via lectin PAIIL. The ability of the chicken yolk antibodies to protect lung epithelial cells against *Pseudomonas aeruginosa* adhesion has been already proven. Therefore this thesis has mainly focused on the influence of the yolk antibodies specific against PAIIL on the development of infection in lungs of experimental animals. The objective was the optimization of the experimental model on which it would be possible to observe the infection development caused by luminescent bacteria strain *in vivo* using the optical tomography. At first the experiments have been performed on Wistar rats. Since the bacteria colonies in the rat lungs were not detectable *in vivo* on the available equipment, the rat experimental model showed up as not suitable. Further on only the mouse models were used. Experiments for the inhalation of the antibodies and intratracheal instillation of the bacteria suspension have been carried out. Using already established system the effects of antibody prophylaxis on the bacterial infection development in comparison with the control group inhaled buffer PBS were tested. It was found that the antibodies inhaled before the application of the bacteria do increase probability of the bacterial infection.

Key words

Bacterial infection, chicken yolk antibodies, optical tomography, mouse intubation