

***In vivo* transfection study of chitosan-DNA-FAP-B nanoparticles as a new non viral vector for gene delivery to the lung**

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Background and Aims: Gene therapy targeted at the respiratory epithelium holds therapeutic potential for diseases such as cystic fibrosis and lung cancer. We recently reported that Chitosan-DNA-FAP-B nanoparticles are good candidates for targeted gene delivery to fibronectin molecules (FAP-B receptors) of lung epithelial cell membrane. In this study Chitosan-DNA-FAP-B nanoparticles were nebulized to mice using air jet nebulizer.

Methods: The effect of nebulization on size, zeta potential and DNA binding ability of nanoparticles were studied. The level of gene expression in the mice lungs was evaluated. **Results:** Nebulization did not affect the physicochemical properties of nanoparticles. Aerosol delivery of Chitosan-DNA-FAP-B nanoparticles resulted in 16-fold increase of gene expression in the mice lungs compared with Chitosan-DNA nanoparticles.

Conclusions: This study suggested that Chitosan-FAP-B nanoparticle can be a promising carrier for targeted gene delivery to the lung.

Keywords: Chitosan; Gene delivery; Lung