[OE1-2] [2004-10-22 15:15 - 15:30 / Room 205]

Improved Antisense Delivery System to Reduce IL-4 Level for the Treatment of Asthma In Vitro and In Vivo

Seong Ji-Hye°, Kim Sung Tae, Lee Kyung Mi, Kim Chong-kook

College of Pharmacy, Seoul National University, College of Pharmacy, Seoul National University, Seoul, 151-742, South Korea, College of Medicine, Korea University, Collegy of Pharmacy, Seoul National University

Purpose. The interleukin-4 (IL-4) is essential for T_H2-mediated inflammation observed in allergic asthma. To block the production of IL-4 for the treatment of asthma, antisense oligonucleotides (ASO) targeting IL-4 were designed, and polyethylenimine (PEI) was used to enhance the delivery of IL-4 antisense. In this study, the optimal condition of IL-4 ASO delivery system was developed in vitro and in vivo. Methods. Antisense oligonucleotides were designed to inhibit the translation initiation region of murine IL-4 mRNA (+4 to +25). In vitro transfection efficiencies of various IL-4 ASO/PEI complexes were measured using flow cytometry and ELISA. XTT assay was performed to evaluate the cytotoxicity. The size and morphology of the complex were visualized using atomic force microscopy (AFM). After BALB/c mice were sensitized to ovalbumin, the IL-4 level in bronchoalveolar lavage (BAL) fluid were analyzed using ELISA. Results. The uptake efficiency of the complex at NP ratio of 10 was 14.5-fold higher than that of naked ASO. IL-4 level was reduced to 29.4% by ASO/PEI complex at that ratio, and the cytotoxicity was low. Thus, the complex at NP ratio of 10 was most effective condition. In AFM images, the complexes were dispersed homogeneously, and the size was about 98 nm. ASO/PEI complex was more effective than naked ATS in vivo. Conclusions. In this study, effective gene delivery system for the treatment of asthma was developed by improving the delivery of IL-4 ASO with PEI. Therefore, the results of this study provide the possibility of gene therapy in allergic asthma.

[OE1-3] [2004-10-22 15:30 - 15:45 / Room 205]

Cationic solid lipid nanoparticles for in vivo gene delivery based on the dermal application

Jin Su-Eon°, Park Hyun-Joo, Kim Yang-Bae, Kim Chong-Kook

College of Pharmacy, Seoul National University, Korea

Purpose : To develop the gene delivery system for the dermal use, a cationic solid lipid nanoparticles (SLNs) were prepared. Methods : Cationic SLNs were formulated with 3b-N-(N',N'-dimethylaminoethane)-carbamoyl cholesterol (DC-Chol) or 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP), tricaprin as a solid core and