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Specification of DDMC

A stable and soap-less latex of DEAE-dextran-MMA graft copolymer (DDMC) has been developed for Non-viral gene delivery vectors possible to autoclave. Transfection activity was determined using the X-gal staining method and a higher value of 5 times or more was confirmed for DDMC samples than for the starting DEAE-dextran hydrochloride such as Fig.2. The resulted DDMC having amphiphilic domain, to form a polymer micelle, should become a stable latex with a hydrophilic-hydrophobic micro-separated-domain. The complex by DDMC and plasmid may be formed on the spherical structure of the amphiphilic micro-separated-domain of DDMC and have a good affinity to cell membrane such as Fig.3.

The absorption spectrum shift to a high energy direction at around 3450cm^{-1} of the complexes between DNA and DDMC may mean to form more compact structures by a coulomb force between the phosphoric acid of DNA and the diethyl-amino-ethyl(DEAE) group of DEAE-dextran copolymer to conclude to DNA condensation possible a high transfection efficiency such as Fig.1. The high efficiency of this graft-copolymer autoclave-sterilized can make it a valuable tool for a safety gene delivery in vivo.

Fig.3

2-diethylaminoethyl-dextran-methyl methacrylate Graft Copolymer for Non-Viral Gene Delivery

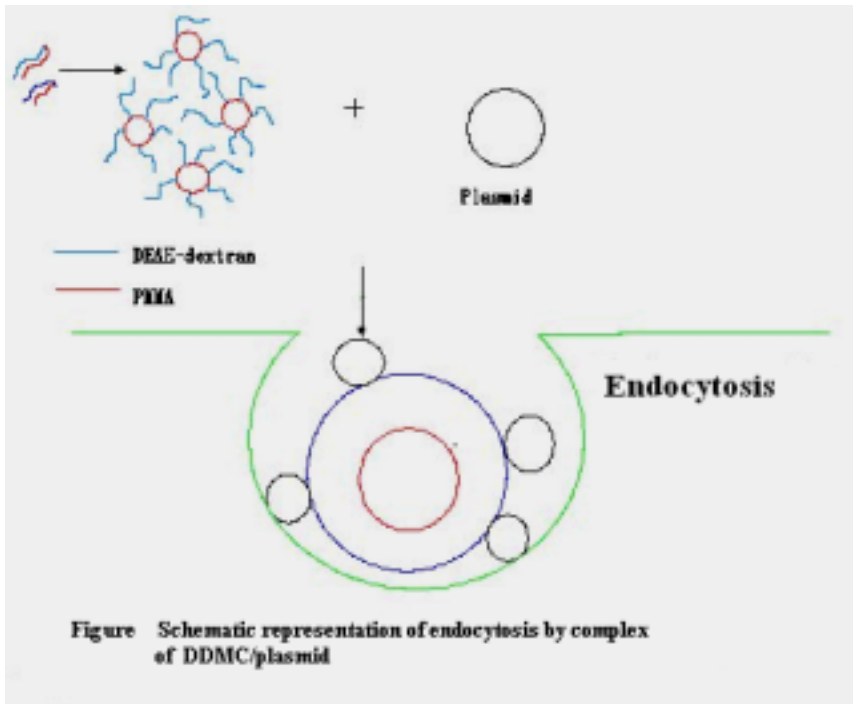


Fig.1

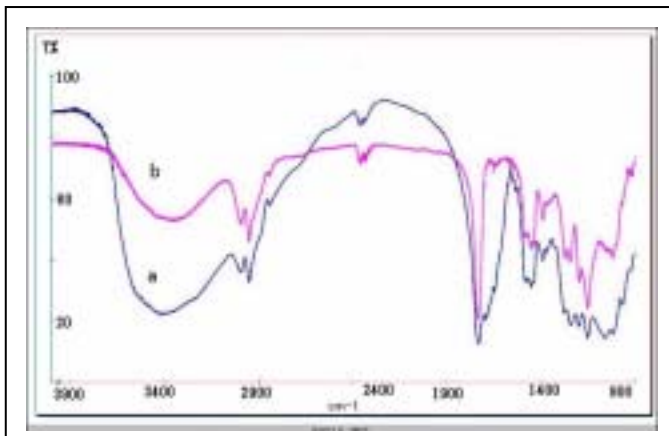


Fig.2 Transfection activity of DDMC with Lac-Z reporter plasmid was evaluated in vitro using 293 cells.

