

Toxicity evaluation of dextran-spermine polycation as a tool for genetherapy in vitro.

ABSTRACT

Cationic polymers are a leading class of nonviral self-assembled nucleic acid delivery systems. Cationic polymers have been shown to condense the DNA so that the entrapped DNA is protected from contact with DNase. The objective of the present study is to evaluate the effect of cationic dextran on the proliferation rate, morphological changes and biosynthetic activities in vitro. Cationic dextran was prepared by means of reductive-amination between oxidized dextran and the natural oligoamine, spermine. Four kinds of biological evaluations including cell proliferation assay, ultrastructural changes of cells using transmission electron microscopy (TEM), acridine orange/Propidium Iodide and cell cycle were studied. Our results clearly indicated that the toxicity of cationic dextran is dose depended and it is not toxic at low concentration and tolerable by the cells, and it can be used as a tool for gene delivery.

Keyword: Dextran-spermine; Genetheraphy; Nonviral vectors; Toxicity.