**In vitro intracellular trafficking of biodegradable nanoparticles dextran spermine in cancer cell lines.**

ABSTRACT

The objective of the present study is to evaluate the effect of cationic dextran on the proliferation rate and biosynthetic activities of HT29, a human colonic adenocarcinoma, and MCF7, a human breast cancer cell line. Cationic dextran was prepared by means of reductive-amination between oxidised dextran and the natural oligoamine, spermine. Biological evaluations including cell proliferation assay, and cell cycle were studied. Flow cytometery was performed in order to determine the biological behaviour of cationic dextran after internalised into the cells. Our results clearly indicated that the cationic dextran was not toxic to the cells when the concentration was 5 μg/ml or lower. The results of the cell cycle flow cytometery indicated that the means of R2 in HT29, MCF7 and HeLa cells were less than 5 three days after treatment with 5 μg/ml of cationic dextran. We conclude that the toxicity of cationic dextran is dose dependent and it is not toxic at concentration lower than 5 μg/ml, and tolerable by the cells, and it can be used as a tool for gene delivery.

**Keyword:** Biodegradable nanoparticle; Dextran spermine; HT29; MCF7; DNA; In vitro; Toxicity.