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Tissue Distribution, Cytotoxicity and Pharmacokinetic Studies of Multifunctional Citric Acid Dendrimers using the Drug Cyclophosphamide

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Abstract : The aim of present work is to develop a multifunctional dendritic carrier for targeting tumor cells that overcome drug leakage during circulation and encapsulate tightly an anticancer drug within it through high affinity interactions. PEGylation, polyethylene glycol addition to dendritic carriers improves its circulation time in the body and also ensures high stability without detectable drug release from formulations other than the target site. PEGylated citric acid dendrimer was found an efficient carrier for targeting antitumor agent, cyclophosphamide to the target tumor organs. Dendrimers are repeatedly branched, spherical molecular moieties synthesized by Divergent technique and characterized for acute cytotoxicity assays, pharmacokinetic parameters and tissue distribution studies. Results of the above studies met the objective and tumor uptake of cyclophosphamide has increased significantly when compared with other organs and exhibited relatively lower toxicity to other organs targeting specifically tumor cells. Thus, the data suggest PEGylated citric acid dendrimer-drug complex is a simple and efficient carrier system to deliver drugs to the tumor cells.

Key words : Dendrimer, Acute toxicity, Tumor, myeloid, melanoma, multi-functional.

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