

Perspectives of dendrimer-based nanoparticles in cancer therapy

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Currently, cancer is the second most common cause of death in the United States, exceeded only by heart disease. Chemotherapy traditionally suffers from a non-specific distribution, with only a small fraction of the drug reaching the tumor, in this sense, the use of dendrimers incorporating drugs non-covalently encapsulated inside the dendrimer or covalently conjugated have proven to be effective against different cancer cell lines. However, at present the dendrimers used as drug-carriers still do not meet the necessary characteristic to be considered as an ideal dendrimer for drug delivery; high toxicity, bio-degradability, low toxicity, biodistribution characteristics, and favorable retention with appropriate specificity and bioavailability have not been fully covered by the current available dendrimers. However, the development and study of new dendrimers drug-carriers continues to be an important tool in the cancer therapy as they can be functionalized with varied ligands to reach the tumor tissue through the different body barriers in the body with minimal loss of activity in the bloodstream, have the ability to selectively kill tumor cells without affecting the normal cells and most important with a release mechanism controlling actively. Given the continuous efforts and research in this area of interest, we presented in this review the work done with a special emphasis on the development of dendrimers as a major tool in the combination with drugs, as a potential adjunctive agent in anticancer therapy. © 2018, Academia Brasileira de Ciências. All rights reserved.

Cancer therapy

Dendrimers

Nanoparticles

Pharmacodynamics

antineoplastic agent

dendrimer

drug carrier

nanoparticle

animal

human

neoplasm

Animals

Antineoplastic Agents

Dendrimers

Drug Carriers

Humans

Nanoparticles

Neoplasms