In vitro Toxicological Effects of Carbon Nanostructures and Chemoterapic

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Acute myeloid leukemia (AML) is an aggressive cancer characterized by the extensive growth of abnormal white blood cells. AML is primarily treated by chemotherapeutic agents and it is not usual apply radiotherapy. Instead the existence of several chemotherapeutic compounds, they can affect normal cells and cause side effects such as anemia, bleeding and infection. U937 was isolated from a diffuse histiocytic lymphoma but the cell line express myeloid markers and is widely used in the investigation of myeloid differentiation. Drugs based on platinum has antitumorigenic activities against wide variety of cancers but its side effects limits the treatment of the patients and is not used in the treatment of AML, however these drugs induces apoptosis of acute promyelocitic cells in a dose-dependent manner. The aim of this study was to investigate the antitumoral effect of chemotherapics associated with carbon nanostructure in U937 cells by MTT reduction assay. Our results demonstrated that the association between carbon nanostructure and drug based on platinum was almost hundredfold more cytotoxic to this leukemia cell model than free drug (IC₅₀ values of 0.01 µg/mL versus 1 µg/mL, respectively) indicating to be an interesting drug delivery system.

Word Keys: cytotoxicity; U937 cells; carbon nanostructures.
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