Anticancer Activity of Carbon Nanomaterials-Camptothecin Complexes

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Due to their large surface area, high cellular internalization and preferential tumor accumulation, carbon nanomaterials have attracted much attention in biomedicine to be used as drug nanocarriers to transport chemotherapeutic [1-3]. Furthermore, these systems could be used for formulation of hydrophobic molecules which lack of suitable physicochemical characteristics required for development of stable pharmaceutical dosage form. Camptothecin (CPT) is a more potent anticancer agent than other well-known anticancer drugs such as doxorubicin (DOX). However, CPT practical use is greatly hampered due to its low solubility in biological media, so developing new drug delivery nanocarriers for CPT would be of high interest [4]. In this work, the potential of carbon nanotubes (CNT), graphene oxide (GO), reduced graphene oxide (RGO) and carbon nanodiamonds (ND) in the field of drug delivery as nanocarriers of CPT was compared. *In vitro* studies were performed on human epithelial colorectal adenocarcinoma (Caco-2) cells. The highest improvement in CPT anticancer activity was obtained for nanocarriers that are able to establish strong π-π interactions with CPT [5].

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