

Designing of the anticancer nanocomposite with sustained release properties by using graphene oxide nanocarrier with Phenethyl isothiocyanate as anticancer agent

ABSTRACT

In this study anticancer nanocomposite was designed using graphene oxide (GO) as nanocarrier and Phenethyl isothiocyanate (PEITC) as anticancer agent. The designed formulation was characterized in detailed with XRD, Raman, UV/Vis, FTIR, DLS and TEM etc. The designed anticancer nanocomposite showed much better anticancer activity against liver cancer HepG2 cells compared to the free drug PEITC and was also found to be nontoxic to the normal 3T3 cells. In vitro release of the drug from the anticancer nanocomposite formulation was found to be sustained in human body simulated phosphate buffer saline (PBS) solution of pH 7.4 (blood pH) and pH 4.8 (intracellular lysosomal pH). This study suggests that GO could be developed as an efficient drug carrier to conjugate with PEITC for pharmaceutical applications in cancer chemotherapies.

Keyword: Graphene oxide; Anticancer; Phenyisothiocyanate; Nanocomposite; Nano-carrier

