

Tamoxifen drug loading solid lipid nanoparticles prepared by hot high pressure homogenization techniques.

ABSTRACT

As drug delivery systems Nanoparticulate widely investigated because of many advantages such as smaller size, controlled drug release potential, targeting ability, enhancement of therapeutic efficacy and reduction of toxicity. So, Solid Lipid Nanoparticles have recently received considerable attention as alternative drug delivery carrier. In this study Solid Lipid Nanoparticles (SLNs) containing tamoxifen, nonsteroidal antiestrogens have been loaded and to be used as breast cancer therapy, were prepared by hot High Pressure Homogenization techniques. Tamoxifen loaded SLNs seem to have dimensional properties useful for parenteral administration. Preliminary study of antiproliferative activity in vitro, carried out on MCF-7 cell line (human breast cancer cells), demonstrated that SLNs, containing tamoxifen showed an antitumoral activity comparable to free drug. Tamoxifen loaded SLNs seem to have dimensional properties useful for parenteral administration. SLN was characterized by Differential Scanning Calorimetry (DSC), Transmission Electron Microscopy (TEM), Zeta Potential and Particle Size. The results of characterization studies strongly support the potential application of Tamoxifen-loaded SLNs as a carrier system. The SLN presented here are well suited for certain drug delivery applications, particularly breast cancer therapy.

Keyword: Breast cancer; Cytotoxicity; Drug loading; High pressure homogenization; Solid lipid nanoparticles; Tamoxifen.