

PubMed

U.S. National Library of Medicine
National Institutes of Health

Display Settings: Abstract

[Acta Biochim Biophys Sin \(Shanghai\)](#). 2011 Feb 24. [Epub ahead of print]

Curcumin delivery by methoxy polyethylene glycol-poly(caprolactone) nanoparticles inhibits the growth of C6 glioma cells.

Shao J, Zheng D, Jiang Z, Xu H, Hu Y, Li X, Lu X.

Department of Neurosurgery, Wuxi People's Hospital of Nanjing Medical University, Wuxi 214023, China.

Abstract

As a potential anticancer agent, curcumin (Cum) has been reported for its chemopreventive and chemotherapeutic activity in a series of cancers through influencing cell cycle arrest, differentiation, apoptosis, etc. Therefore, the potential activity against various cancers of Cum raises the possibility of its application as a novel model drug in nanoparticle-based delivery systems. The current study reported a spherical core-shell structure curcumin-loaded nanoparticle (Cum-np) formed by amphiphilic methoxy polyethylene glycol-poly(caprolactone) (mPEG-PCL) block copolymers. Characterization tests indicated that Cum was incorporated into mPEG-PCL-based nanoparticles with high encapsulation efficiency due to its lipophilicity. The incorporated Cum could be released from Cum-np in a sustained manner. Cum was effectively transported into the cells by nanoparticles through endocytosis and localized around the nuclei in the cytoplasm. In vitro studies proved that the cytotoxicity of Cum-np would be pro-apoptosis effect against rat C6 glioma cell line in a dose-dependent manner. The present results suggest that Cum-np could be a potential useful chemotherapeutic formulation for malignant glioma therapy. Moreover, the development of traditional Chinese medicine with nanoscale drug formulation warrants more intensive research for its clinical applications.

PMID: 21349881 [PubMed - as supplied by publisher]