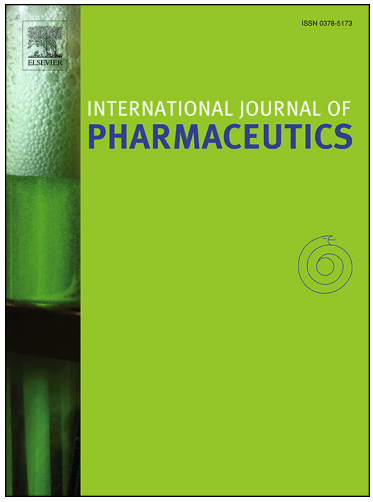

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RVG29-modified Docetaxel-loaded nanoparticles for brain-targeted glioma therapy

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Abstract

Gliomas are the most common malignant brain tumor, but treatment is limited by the blood–brain barrier (BBB), especially for chemotherapeutic drugs. Although some chemotherapy drugs can pass through the BBB, many of these agents are toxic to normal brain tissue. To maximize therapeutic effects, chemotherapeutic drugs must accumulate at the glioma site. In this study, a specific ligand (the RVG29 peptide) that can combine with acetylcholine receptors was conjugated to polyethylene glycol-modified poly-(D,L-lactide-co-glycolide) (PEG-PLGA) to develop a targeted carrier; preparation of the targeted docetaxel nanoparticles (DTX-NPs) was performed by the nanoprecipitation method. The NPs were approximately 110 nm and had smooth surfaces. Enzyme-linked immunoassay results showed that the amount of receptor on the surface of glioma cells was 2.04-fold higher than that of nonmalignant cells, which may promote accumulation of RVG29-modified NPs at the targeting site. NPs showed targeting properties for glioma cells