PubMed

Format: Abstract

Full text links

ELSEVIER FULL-TEXT ARTICLE

J Control Release. 2017 Jul 3;261:187-198. doi: 10.1016/j.jconrel.2017.06.032. [Epub ahead of print]

A potential non-invasive glioblastoma treatment: Nose-to-brain delivery of farnesylthiosalicylic acid incorporated hybrid nanoparticles.

Sekerdag E[1], Lüle S[2], Bozdağ Pehlivan S[3], Öztürk N[3], Kara A[4], Kaffashi A[5], Vural I[3], Işıkay I[6], Yavuz B[3], Oguz KK[7], Söylemezoğlu F[8], Gürsoy-Özdemir Y[9], Mut M[6].

Author information

Abstract

New drug delivery systems are highly needed in research and clinical area to effectively treat gliomas by reaching a high antineoplastic drug concentration at the target site without damaging healthy tissues. Intranasal (IN) administration, an alternative route for non-invasive drug delivery to the brain, bypasses the blood-brain-barrier (BBB) and eliminates systemic side effects. This study evaluated the antitumor efficacy of farnesylthiosalicylic acid (FTA) loaded (lipid-cationic) lipid-PEG-PLGA hybrid nanoparticles (HNPs) after IN application in rats. FTA loaded HNPs were prepared, characterized and evaluated for cytotoxicity. Rat glioma 2 (RG2) cells were implanted unilaterally into the right striatum of female Wistar rats. 10days later, glioma bearing rats received either no treatment, or 5 repeated doses of 500μM freshly prepared FTA loaded HNPs via IN or intravenous (IV) application. Pre-treatment and post-treatment tumor sizes were determined with MRI. After a treatment period of 5days, IN applied FTA loaded HNPs achieved a significant decrease of 55.7% in tumor area, equal to IV applied FTA loaded HNPs. Herewith, we showed the potential utility of IN application of FTA loaded HNPs as a non-invasive approach in glioblastoma treatment.

Copyright © 2017 Elsevier B.V. All rights reserved.

KEYWORDS: Drug delivery; Farnesylthiosalicylic acid; Glioblastoma; Hybrid nanoparticles; Nose-to-brain

PMID: 28684169 DOI: 10.1016/j.jconrel.2017.06.032

LinkOut - more resources

PubMed Commons

PubMed Commons home