Anti-epidermal growth factor receptor siRNA carried by chitosan-transacylated lipid nanocapsules increases sensitivity of glioblastoma cells to temozolomide

Titre	Anti-epidermal growth factor receptor siRNA carried by chitosan-transacylated lipid nanocapsules increases sensitivity of glioblastoma cells to temozolomide
Type de publication	Article de revue
Auteur	Messaoudi, Khaled [1], Saulnier, Patrick [2], Boesen, Kim [3], Benoît, Jean-Pierre [4], Lagarce, Frédéric [5]
Editeur	Dove Medical Press
Type	Article scientifique dans une revue à comité de lecture
Année	2014
Date	Jan-03-2014
Pagination	1479-90
Volume	9
Titre de la revue	International Journal of Nanomedicine
ISSN	1176-9114
Résumé en anglais	Epidermal growth factor receptor (EGFR) is a crucial protein that plays an important role in the maintenance and development of glioblastomas. The silencing or knockdown of EGFR is possible by administering a small interfering ribonucleic acid (siRNA). Lipid nanocapsules (LNCs) covered by chitosan were developed in our laboratory by a transacylation process. The resulting nanocapsules have a positive zeta potential that enables electrostatic interactions with the negatively-charged siRNA. Prior to transfection, the cytotoxicity of the nanocapsules by (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) (MTS) test was performed on the U87MG cell line to determine non-toxic levels of the LNCs to avoid cell mortality. Treatment of the U87MG cells with the chitosan-transacylated LNCs/anti-EGFR siRNA complex resulted in a reduction of EGFR expression by 51.95%±6.03% (P≤0.05) after 96 hours of incubation. It also increased the cellular sensitivity to temozolomide in comparison to untreated cells with siRNA. The largest increase in mortality was 62.55%±3.55% (P<0.05). This successful knockdown provides proof for the concept of surface grafting of siRNA onto LNCs to modify cell sensitivity to temozolomide. The method could be implemented in future clinical models regarding the experimental treatment of glioblastoma cancer.
URL de la notice	http://okina.univ-angers.fr/publications/ua6681 [6]
DOI	10.2147/IJN.S59134 [7]
Lien vers le document	http://dx.doi.org/10.2147/IJN.S59134 [7]
Titre abrégé	IJN

Liens
[1] http://okina.univ-angers.fr/publications?f[author]=10517
[2] http://okina.univ-angers.fr/patrick.saulnier/publications
[3] http://okina.univ-angers.fr/publications?f[author]=10518
[4] http://okina.univ-angers.fr/j.benoit/publications
[5] http://okina.univ-angers.fr/frederic.lagarce/publications
[6] http://okina.univ-angers.fr/publications/ua6681
[7] http://dx.doi.org/10.2147/IJN.S59134