



The effect of functionalizing lipid nanocapsules with NFL-TBS.40-63 peptide on their uptake by glioblastoma cells.

Submitted by Laurent Lemaire on Thu, 01/08/2015 - 09:52

Titre	The effect of functionalizing lipid nanocapsules with NFL-TBS.40-63 peptide on their uptake by glioblastoma cells.
Type de publication	Article de revue
Auteur	Balzeau, Julien [1], Pinier, Maud [2], Berges, Raphael [3], Saulnier, Patrick [4], Benoît, Jean-Pierre [5], Eyer, Joël [6]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2013
Langue	Anglais
Date	2013 Apr
Numéro	13
Pagination	3381-9
Volume	34
Titre de la revue	Biomaterials
ISSN	0142-9612
Mots-clés	Animals [7], Astrocytes [8], Brain [9], Brain Neoplasms [10], Cell Death [11], Cell Line, Tumor [12], Cell Survival [13], Female [14], Glioblastoma [15], Lipids [16], Mice [17], Mice, Inbred C57BL [18], Nanocapsules [19], Neurofilament Proteins [20], Paclitaxel [21], Peptide Fragments [22], Protein Binding [23]
Résumé en anglais	<p>We previously described a neurofilament derived cell-penetrating peptide, NFL-TBS.40-63, that specifically enters in glioblastoma cells where it disturbs the microtubule network both in vitro and in vivo. The aim of this study is to test whether this peptide can increase the targeted uptake by glioblastoma cells of lipid nanocapsules filled with Paclitaxel, and thus can increase their anti-proliferation in vitro and in vivo. Here, using the drop tensiometry we show that approximately 60 NFL-TBS.40-63 peptides can bind to one 50 nm lipid nanocapsule. When nanocapsules are filled with a far-red fluorochrome (DiD) and Paclitaxel, the presence of the NFL-TBS.40-63 peptide increases their uptake by glioblastoma cells in culture as evaluated by FACS analysis, and thus reduces their proliferation. Finally, when such nanocapsules were injected in mice bearing a glioma tumour, they are preferentially targeted to the tumour and reduce its progression. These results show that nanocapsules functionalized with the NFL-TBS.40-63 peptide represent a powerful drug-carrier system for glioma targeted treatment.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua6664 [24]
DOI	10.1016/j.biomaterials.2013.01.068 [25]
Lien vers le document	http://dx.doi.org/10.1016/j.biomaterials.2013.01.068 [25]
Autre titre	Biomaterials

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- [25] <http://dx.doi.org/10.1016/j.biomaterials.2013.01.068>
- [26] <http://www.ncbi.nlm.nih.gov/pubmed/23391494?dopt=Abstract>

Publié sur *Okina* (<http://okina.univ-angers.fr>)