Influence of size, surface coating and fine chemical composition on the in vitro reactivity and in vivo biodistribution of lipid nanocapsules versus lipid nanoemulsions in cancer models

Titre	Influence of size, surface coating and fine chemical composition on the in vitro reactivity and in vivo biodistribution of lipid nanocapsules versus lipid nanoemulsions in cancer models
Type de publication	Article de revue
Auteur	Hirsjärvi, Samuli [1], Dufort, Sandrine [2], Gravier, Julien [3], Texier, Isabelle [4], Yan, Qiao [5], Bibette, Jérome [6], Sancey, Lucie [7], Josserand, Véronique [8], Passirani-Malleret, Catherine [9], Benoît, Jean-Pierre [10], Coll, Jean-Luc [11]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2013
Langue	Anglais
Date	Avril 2013
Numéro	3
Pagination	375-87
Volume	9
Titre de la revue	Nanomedicine
ISSN	1549-9642
Mots-clés	Animals [12], Coated Materials, Biocompatible [13], complement activation [14], Drug Carriers [15], Emulsions [16], Endocytosis [17], Female [18], HEK293 Cells [19], Humans [20], Lipids [21], Mice [22], Mice, Nude [23], Nanocapsules [24], Neoplasms [25], Particle Size [26], Subcutaneous Tissue [27], Surface Properties [28], Tissue Distribution [29], Xenograft Model Antitumor Assays [30]

Résumé en anglais	UNLABELLED: Lipid nanocapsules (LNCs) and lipid nanoemulsions (LNEs) are biomimetic synthetic nanocarriers. Their in vitro and in vivo performance was evaluated as a function of their size (25, 50 and 100 nm) and the surface PEG chain length. Analysis methods included complement activation test, particle uptake in macrophage and HEK293(β3) cells and biodistribution studies with tumor-grafted mice by fluorescence imaging. A particular attention was paid to keep the concentration of each nanocarrier and to the amount of fluorescent dye in comparable conditions between the in vitro and in vivo studies. Under these conditions, no significant differences were found among the three tested particle sizes and the two nanocarrier types. Longer PEG chains on the LNE surface provided better stealth properties, whereas PEG modification on the LNC formulations inhibited the production of stable nanocarriers. Passive accumulation of LNCs and LNEs in different tumor types depended on the degree of tumor vascularization. FROM THE CLINICAL EDITOR: This study of lipid nanocapsules and lipid nanoemulsions compares their vitro and in vivo performance as a function of size and surface PEG chain length, demonstrating no significant difference among the tested particle sizes. Longer PEG chains on the LNE surface provided better stealth properties, whereas PEG modification on the LNC formulations inhibited the production of stable nanocarriers.
URL de la notice	http://okina.univ-angers.fr/publications/ua14337 [31]
DOI	10.1016/j.nano.2012.08.005 [32]
Autre titre	Nanomedicine: nanotechnology, biology and medicine
Identifiant (ID) PubMed	22960195 [33]

Liens

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[30] http://okina.univ-angers.fr/publications?f[keyword]=18887
[31] http://okina.univ-angers.fr/publications/ua14337
[32] http://dx.doi.org/10.1016/j.nano.2012.08.005
[33] http://www.ncbi.nlm.nih.gov/pubmed/22960195?dopt=Abstract