Development and Evaluation of Injectable Nanosized Drug Delivery Systems for Apigenin

Titre	Development and Evaluation of Injectable Nanosized Drug Delivery Systems for Apigenin
Type de publication	Article de revue
Auteur	Karim, Reatul [1], Palazzo, Claudio [2], Laloy, Julie [3], Delvigne, Anne-Sophie [4], Vanslambrouck, Stéphanie [5], Jérôme, Christine [6], Lepeltier, Elise [7], Orange, Francois [8], Dogne, Jean-Michel [9], Evrard, Brigitte [10], Passirani-Malleret, Catherine [11], Piel, Géraldine [12]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2017
Langue	Anglais
Date	27 Avril 2017
Titre de la revue	International Journal of Pharmaceutics
ISSN	03785173
Mots-clés	Apigenin [13], Injectable nanocarrier [14], Lipid nanocapsule [15], Liposome [16], Polymeric nanocapsule [17]
Résumé en anglais	The purpose of this study was to develop different injectable nanosized drug delivery systems (NDDSs) i.e. liposome, lipid nanocapsule (LNC) and polymeric nanocapsule (PNC) encapsulating apigenin (AG) and compare their characteristics to identify the nanovector(s) that can deliver the largest quantity of AG while being biocompatible. Two liposomes with different surface characteristics (cationic and anionic), a LNC and a PNC were prepared. A novel tocopherol modified poly(ethylene glycol)-b-polyphosphate block-copolymer was used for the first time for the PNC preparation. The NDDSs were compared by their physicochemical characteristics, AG release, storage stability, stability in serum, complement consumption and toxicity against a human macrovascular endothelial cell line (EAhy926). The diameter and surface charge of the NDDSs were comparable with previously reported injectable nanocarriers. The NDDSs showed good encapsulation efficiency and drug loading. Moreover, the NDDSs were stable during storage and in fetal bovine serum for extended periods, showed low complement consumption and were non-toxic to EAhy926 cells up to high concentrations. Therefore, they can be considered as potential injectable nanocarriers of AG. Due to less pronounced burst effect and extended release characteristics, the nanocapsules could be favorable approaches for achieving prolonged pharmacological activity of AG using injectable NDDS.
URL de la notice	http://okina.univ-angers.fr/publications/ua15898 [18]
DOI	10.1016/j.ijpharm.2017.04.064 [19]
Lien vers le document	http://www.sciencedirect.com/science/article/pii/S0378517317303745 [20]
Titre abrégé	Int. j. pharm.

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