Mohamed Attia et al., J Nanomed Nanotechnol 2015, 6:6
http://dx.doi.org/10.4172/2157-7439.C1.025

OMICS International
conferenceseries.com

5th International Conference on
Nanotek & Expo
November 16-18, 2015 San Antonio, USA

Nano-emulsions for targeted biomedical imaging

Mohamed Attia[1, 2], **Nicolas Anton**[1] and **Thierry F Vandamme**[1]
[1]University of Strasbourg, France
[2]National Research Center, Egypt

In spite of the progresses of the imagers' efficiency, notably X-ray and optical modality, their use and potentials are still dramatically limited by the low efficiency and toxicity of contrast agents. This study presents the development of new contrast agents overcoming these limitations, based on non-toxic nano-emulsions highly loaded in contrasting materials, intended to fluorescence tomography and/or computed tomography (CT) preclinical imaging. The success of the formulation of such contrast agents relies on several interdependent challenges: (i) Designing efficient and cost-effective contrast that are easy to synthesize and that can be loaded at high concentrations in nano-particles. (ii) Developing formulations of the contrast agents without organic solvents and specific mechanical device. (iii) Adjusting the nano-particle surface to allow high stability of the nano-particles (at least several months), good bioavailability and efficient targeting. (iv) a long circulation in blood, the control of the bio-distribution and pharmacokinetics and the absence of toxicity. Contrast agents were formulated as lipid nano-emulsions that consisted in a lipid core, surrounded by a non-ionic PEGylated surfactant layer. Our preliminary results regarding the CT scan on mice showing the pharmacokinetics in blood, liver and spleen of nano-emulsions composed iodinated glyceryl mono-caprilate. Comparing with iodinated vitamin E which has presented in our previous study, these two nano-emulsions only differ in the chemical nature of the core, however their pharmacokinetics is strongly different as one targets the liver, and the other the spleen.

Biography

Mohamed F Attia is a researcher in National Research Center, Cairo, Egypt. Currently, he is a PhD scholar in Strasbourg University. He is working in the discipline of Nano-medicine, particularly in targeted biomedical imaging, by synthesis and development of new nano-emulsions through various techniques as a promising candidate for targeting specific organs, tissues or cells, either for imaging and/or treatment.

mattianrc@hotmail.fr

Notes: