

8th International Conference and Exhibition on

Pharmaceuticals & Novel Drug Delivery Systems

March 07-09, 2016 Madrid, Spain

Microbubbles formulated with lipid nanocapsules for a better stabilization

Mouzouvi Celia R A^{1,2}, Umerska Anita¹, Fouchet Florian¹, Bigot André² and Saulnier Patrick¹

¹INSERM, France

²Université d'Abomey-Calavi, Bénin

Microbubbles combined with ultrasounds have showed important effect on drugs and genes delivery. Indeed, these nanoscale particles filled with gas are able to oscillate in the presence of ultrasonic waves. Thus, the drug concentration at specific area is increased, improving their therapeutic effects and reducing adverse effects. Despite of that therapeutical advance, small bubbles stabilization remains a big challenge because of their inherent important Laplace pressures.

In this study, we proposed to use well defined colloidal particles called Lipid Nano Capsules (LNCs) to stabilize air bubbles and to investigate on their behavior under ultrasounds using sodium fusidate as a tracer. Microbubbles were prepared by modified agitation method. Sodium fusidate were incorporated by incubation. The pharmaceutical active triggering release was performed for the sample against a control in the PSB (phosphate solution buffer) using the instrument of Sonidel Limited SP 100. The size distribution of microbubbles formulated was in the range 0.6-2 μm with an average size of 1.5 ± 0.56 (μm). The encapsulate rate for the bubbles, was 31%. The drug quantity released was 7.3% against 8.3% for the control. In conclusion, small bubbles can be stabilized by the LNCs allowing them to be charged in drug. The drug encapsulation efficiency and the drug release rate were acceptable because they exceed the minimum inhibitory concentration (IMC) of sodium fusidate. Furthermore, the sodium fusidate loaded-microbubbles efficacy on the bacterial culture could be evaluated.

rosedescience@yahoo.fr

A posterior-eye drug delivery system for treatment of age-related macular degeneration

Dimitris Hatzivramidis

National Technical University of Athens, Greece

Age-related macular degeneration (AMD) is a progressive, neurodegenerative, ocular disease and a leading cause of irreversible loss of vision in aging adults in developed countries. Its pathogenesis is characterized by uncontrolled proliferation of cells and cell growth in blood vessels, leaking of blood and proteins and aberrant folding, aggregation and accumulation of proteins. Overexpression of the vascular epithelial growth factor (VEGF) causes uncontrolled blood vessel growth resulting in violation of the blood-retina barrier and accumulation of blood and protein debris which causes neurodegeneration of cells in the retinal pigmented epithelium (RPE) and tissue dysfunction. The current treatment of AMD is primarily based on anti-VEGF drugs which are administered by intravitreal injection. It has been recently proposed to administer exogenous Heat shock proteins such as Hsp70 by intravitreal injection in order to clear accumulated debris from RPE and inhibit aggregate-based cell neurodegeneration. An equally effective and less vision-threatening than intravitreal injection route of administration of the above macromolecular drugs is transscleral delivery from an implant in the posterior eye, thermally-sensitive A study for sustained delivery of an anti-VEGF agent to the posterior eye from an implant, made of a poly(N-isopropylacrylamide) (NIPAM) thermally sensitive gel. This gel undergoes a phase transition characterized by a lower critical solution temperature (LCST) of 33°C, below which the drug is loaded in the gel and above which the drug is released from the gel.

dthatzia@central.ntua.gr