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The effects of inhaled Rapamycin solid lipid particle size on transport across lung epithelial cells

Emelie Land, Lyn M. Moir, Daniela Traini, Paul M. Young and Hui Xin Ong
The University of Sydney, Australia

Abstract

Lymphangioleiomyomatosis (LAM) is a rare lung disease characterized by the uncontrolled growth of smooth like muscle cells (LAM cells) in the lungs that can spread to other body parts via the lymphatic system Current treatment for LAM is oral Rapamycin, which is limited by its low bioavailability (~15%) and side effects [1, 2]. It???s been shown that particles of approximately <1000nm with a negative surface charge are able to enter the lymphatic system The current study aimed to determine the optimum size of Rapamycin solid lipid nanoparticles (SLN) that will facilitate drug entry into the lymphatic system through the inhaled route in order to increase lung bioavailability, reduce systemic side effects and potentially have increased efficacy. The current study showed that Rapamycin-SLN with negative surface charge and size of approximately 200nm is able to cross the lung epithelium faster than larger particles. Future studies will be expanded to evaluate the entry of these SLN particles

Speaker Biography:

Emelie Landh completed her Bachelor in Medical Sciences, majoring in Pharmacology at the University of Sydney in 2013. She went on to complete a Graduate Diploma in Pharmacology with the Respiratory Technology Group at the Woolcock Institute of Medical research at the University of Sydney in 2014. She is currently at the end of the second year of her PhD under the supervision of Dr. Hui Xin Ong with the Respiratory Technology Group. Her PhD project involves developing an inhaled combination treatment using Solid-Lipid Nanoparticles for treating Lymphangioleiomyomatosis (LAM).

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