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Rifabutin: New formulations with improved therapeutic effect against tuberculosis

Maria Manuela Gaspar

University of Lisbon, Portugal

Tuberculosis (TB) is the leading cause of death among infectious disease worldwide. Although the development of new antimycobacterial drugs is an obvious and necessary strategy to fight TB the therapeutic improvement of already approved drugs constitutes an alternative strategy. In the present work rifabutin, a first line drug against TB was chosen aiming the maximization of its concentration at infected sites while reducing its toxic effects and treatment duration. For this purpose, liposomes, the most successful lipid system with many liposomal formulations already on the market with proven safety and efficacy was selected. Biodistribution studies of RFB liposomes by intravenous administration allowed a higher accumulation of the antibiotic in liver, spleen and lungs in comparison with the respective free form. In a murine *Mycobacterium tuberculosis* model of infection RFB liposomes were able to reduce in a very high extent the bacterial load in liver, spleen and lungs being these results in agreement with biodistribution studies. Taking into account that in case of TB the lung constitutes the main infected organ, the pulmonary administration was also tested using spray dried microparticles. *In vivo* studies demonstrated that pulmonary delivery of RFB formulations constitutes a valuable approach to fight TB when compared to infected mice receiving RFB in the free form by the oral route. The obtained results clearly evidence the therapeutic improvement of RFB after incorporation in liposomes and in spray dried microparticles for intravenous and pulmonary administration respectively. The same strategy can be applied to other anti-tubercular drugs alone or in combination.

Biography

Maria Manuela Gaspar has completed her PhD in 2005 in Pharmaceutical Technology, University of Lisbon and Postdoctoral studies in the University of Dublin, Trinity College. She is a Researcher in the Research Institute for Medicines, iMed.Ulisboa, University of Lisbon. She is co-author of patents, paper in peer-reviewed journals and book chapters.

mgaspar@ff.ulisboa.pt

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