

Liposomal targeting of glucocorticoids: preclinical and clinical experience in several inflammatory diseases

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Glucocorticoids (GC) are potent anti-inflammatory drugs but their systemic (parenteral/oral) use in inflammatory disorders such as rheumatoid arthritis and inflammatory bowel disease is limited by poor target localization and toxic effects in healthy organs. Targeted delivery of GCs to the site of inflammation with long-circulating liposomes can improve the therapeutic index. This approach has proven successful in our rat and murine arthritis studies and in several other preclinical inflammatory disease models. Furthermore, over the past few years we conducted trials in patients with a variety of diseases of inflammatory origin. Doses of 37.5 up to 300 mg prednisolone in long-circulating liposomes (Nanocort) have been studied in patients with rheumatoid arthritis (RA), kidney disease, colitis ulcerosa (UC), and patients with inflamed and instable atherosclerotic plaques. In total almost 200 patients have been exposed to Nanocort. Besides obtaining a clear impression of its therapeutic potential, these studies allowed us to carefully assess the safety profile and study the pharmacokinetics of Nanocort as a prototype long-circulating liposomal GC product in humans. So far we can conclude that liposomal GC targeting is a safe and efficacious novel treatment strategy for several diseases with an inflammatory component.

Josbert M. "Bart" Metselaar (Rotterdam, July 6th 1971) obtained a MSc degree in Pharmaceutical Sciences in 1995 and a PharmD degree in 1998, both at Utrecht University. During his study he completed a research internship in pharmacology and PK/PD at the Dept of Pharmaceutics, University of Florida, US. In 1999 he started a PhD at the Dept of Pharmaceutics and the Dept of Immunology in Utrecht where he studied novel targeted formulations of anti-inflammatory medicines.

After completing his PhD and a Post Doc fellowship, he decided to translate part of his accomplishments into investigational medicinal products by starting his company Enceladus in 2005, with which he raised more than 6 million Euros funding over the years. With these investments and additional non-equity funding he successfully performed a series of preclinical and clinical development projects on three liposomal products.

In 2012 he took a part-time academic position in the group of Targeted Therapeutics at the University of Twente, where he works on drug carrier design and formulation development in the field of advanced drug delivery for inflammation, atherosclerosis, and cancer. In 2015 he combines this with a position at the Dept. of Experimental Molecular Imaging at the RWTH Aachen University Clinic in Germany.

