Development of microparticles for oral administration of the non-conventional radical scavenger IAC and testing in an inflammatory rat model

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The bis (1-hydroxy-2,2,6,6-tetramethyl-4-piperidinyl)-decandioate (IAC) is an innovative non-conventional radical scavenger used with success in several disease models, such as inflammation, neurological disorders, hepatitis and diabetes. To date, the main limit for the drug use is represented by the intraperitoneal (i.p.) route of administration used in the pharmacological treatments. In order to develop a delivery system that allowed both oral administration and the therapeutic efficacy, Solid Lipid Microparticles (SLMs) containing a theoretical 18% w/w of IAC have been produced. Recently, three formulations (A, B, C) have been tested at different dosages in an inflammation and pain rat model. Inflammatory model was induced by the use of an intraplantar injection of 100ml/paw of Freund's complete adjuvant (FCA). Administered per os at different dosages, IAC B (60% stearic acid-20% Compritol® HD5 ATO) was the most efficient formulation in reducing oedema and alleviating pain, compared to the gold standard Paracetamol. Since the anti-diabetic effects of the i.p. formulation of IAC was already demonstrated in vivo, we are now investigating the therapeutic efficacy of the selected (B) oral IAC formulation (SLMs) in streptozotocin-nicotinamide diabetic mice.