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Istituto per lo studio dei materiali nanostrutturati

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Contributo in atti di convegno

Tipo: Poster

Titolo: Mucoadhesive Solid Lipid Microparticles (SLM) for sustained release of corticosteroids to the lungs

Anno di pubblicazione: 2016

Formato: Elettronico Cartaceo

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Lingua: inglese medio (1100-1500)

Abstract: Pulmonary delivery is the preferred route of drug administration in the treatment of many respiratory disease, such as asthma and chronic obstructive pulmonary disease (COPD). Over the years, several kinds of carriers have been studied for sustained release of corticosteroids and bronchodilators to the lungs. Solid Lipid Microparticles (SLM) due to their biocompatibility and size (3-5 μm) can reach the bronchial epithelium directly, circumvent first pass metabolism and avoid systemic toxicity [1,2]. In this work we describe the preparation and the characterization of two different systems subjected to chitosan and alginate coating for sustained release of fluticasone propionate (FP) into the lungs. The presence of mucoadhesive polymers allows SLMs to adhere better to the mucous layer on the respiratory epithelium as compared with conventional carriers. The obtained systems are characterized in terms of size, polydispersity index (PDI), zeta potential and morphology. We also evaluated the loading capacity (LC) as well as the kinetics release. Afterwards, we evaluated the cytotoxicity in vitro of the free FP or entrapped into SLMs and empty microparticles by MTS viability assays on 16-HBE (human bronchial epithelial cells) cell lines. Neither FP-loaded SLMs nor empty SLMs at the different tested concentrations showed cytotoxicity compared to the free FP. Finally, we tested



the effect of CSE (cigarette smoke extract) in ROS production by bronchial epithelial cells evaluating the expression of survivin and p-erk/tot-erk ratio. FP-loaded SLM significantly reduced survivin expression and p-erk/tot-erk expression ratio.

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