CORTICOSTEROID-LOADED PLGA NANOSPHERES FOR MACROPHAGES TARGETING: A TOOL FOR INFLAMMATION MANAGEMENT

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Macrophages play an important role in maintaining homeostasis of the organism and they influence the progression of various diseases, including chronic inflammation or immune system disorders. Therefore, macrophages-specific drug delivery system seems to be interesting therapeutic tool for wide variety of diseases. In our project we investigate PLGA nanospheres (NSs) as potent macrophage-specific drug delivery system. We have prepared several different corticosteroid-loaded PLGA NSs using both nanoprecipitation and emulsification solvent evaporation methods. Prepared formulations were tested in primary murine bone marrow-derived macrophages and human monocyte cell line THP-1. The encapsulation efficiency (EE%) of prepared NSs was determined by HPLC. We examined the cytotoxicity by the MTS assay, the inflammatory response of cells by determination of proinflammatory and anti-inflammatory cytokines by RT-qPCR. Our nanospheres reached a maximum encapsulation efficiency of corticosteroids 20% and showed effective suppress of production of pro-inflammatory cytokines in lipopolysaccharide-stimulated proinflammatory macrophages. No effects of nanospheres on cellular viability was observed.