

ABSTRACT

Thesis title: Formulation and characterization of oxime loaded PLGA nanoparticles

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The diploma thesis was focused on PLGA nanoparticles (NPs) which could be loaded with oximes, prepared by a double emulsion technique, and characterised by size, polydispersity and zeta potential. The theoretical part deals with the most common methods of the NPs preparation, the polymers and stabilizers employed, and drug delivery to brain. In the experimental part the effect of various formulation factors on NP characteristics were studied: linear or branched PLGA derivative, the concentrations of polymer, the volumes of primary emulsion. Dichloromethane (DCM) or Dimethyl sulfoxide (DMSO) as solvent for polymers were used and Poloxamer 407 or Didodecyldimethylammonium bromide (DDAB) as an outer phase stabilizer were employed. By comparison among the collected results, it seemed 1% A2 in DMSO and stabilization with poloxamer 407 could be best candidate for the oxime loaded drug delivery systems as it was possible to produce nanoparticles with size from 152 to 168 nm with PDI of below 0.15. Electrostatic stability in case of using DDAB was resulted excellent and above 70.3 mV.

Keywords: nanoparticles, obidoxime, double emulsion technique, particles size, polydispersity, zeta potential, stability.