ABSTRAKT

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical Technology

Supervisor: PharmDr. Ondřej Holas, Ph.D.

Consultant: Mgr. Jana Kubačková

Student: Lenka Voldřichová

Title of thesis: Lipid based nanoparticles: drug delivery platform

Lipic nanoparticles, as newly developed dosage forms, can overcome many drawbacks of conventional dosage forms. Their potential can be utilized in particular for prolonged, controlled and targeted release. They can also increase the bioavailability of drugs, especially those with poor solubility and also allow targeting, which causes increased accumulation of lipid nanoparticles in certain tissues compared to other tissues. nanoparticles suitable for drug encapsulation.

The particles were prepared by the emulsion evaporation method. Their characterization was performed using a Zetasizer, which measured the particle size and the zeta potential. The properties of the formulations were evaluated in terms of nanoparticle size, polydispersity, zeta potential, and formulation properties. Differencial scanning calorimetry analysis was also performed on selected formulations.

The selected final formulation was composed of 25 mg glycerol monostearate, 10 mg isopropyl myristate, 15 mg lecithin and Kolliphor P188 0,1% solution. Indomethacin was further encapsulated into this formulation. Particles of about 140 nm were formed, with a zeta potential value of about -40 mV. The polydispersity index, indicating the width of the nanoparticle size distribution, was 0.2 or less, indicating that monodisperse samples were formed. The selected final formulation was purified by nanoparticles using centrifugal concentrators.

Keywords: lipid nanoparticles, solid lipid nanoparticles, nanostrucutred lipid carriers, drug-delivery systems, emulsion-solvent evaporation method