

ABSTRACT

Charles University in Prague

Faculty of Pharmacy in Hradec Králové

Department of Pharmaceutical Technology

Candidate: Mgr. Lenka Burgetová

Consultant: Doc. RNDr. Milan Dittrich, CSc.

Title of Thesis: The application of Terbinafine in the treatment of Mycosis

The theoretical part of this thesis includes an overview of the use of nanoparticles in the treatment of infectious diseases. Some metal nanoconstructs are known to possess antimicrobial activities. Nanoparticles offer significant benefits but at the same time there are some disadvantages compared to conventional antimicrobial agents. Poly(lactic-co-glycolic acid) (PLGA) has been developed to act as a drug delivery system in various biomedical applications. As a biodegradable polymer, its hydrolysis leads to metabolite monomers, causing minimal systemic toxicity. The main focus of this thesis is on experimental part. Nanoparticles were prepared by the emulsion solvent distribution and evaporation method. The internal part of the emulsion contains polyesters of aliphatic hydroxyacids which were synthesized at my academic supervisor's departmental laboratory. It was found that these acids have both suitable constitution and molecular weight. Binary mixtures were prepared from these carriers or ternary mixtures by adding Terbinafine as a model drug. Ethylmethylketone and Ethylacetate were used as the solvents for the polymers. As an emulsifier Cetrimide was used in various concentrations. Zinc Chloride and Gluconate and Lactic acid were used in the external part of the emulsion. The various conditions of the preparation of the nanoparticles have considerable influence on the eventual particle size due to the higher level interactions. This is due to the various intensities with which some interactions function. The measurement of the zeta-potential was not possible due to fluctuating temperatures.