

Efficiency and bioavailability of antimycotic drugs are limited due to many biopharmaceutical and pharmacokinetics factors. Nanoparticles hold great promise to overcome these limitations. Biodegradable polymeric nanoparticles (NPs) based on branched poly(lactide-co-glycolide) loaded by terbinafine and clotrimazole were prepared. The particle size, polydispersity,  $\zeta$ -potential were measured. Encapsulation efficiency was calculated. Dissolution tests with terbinafine were carried out at pH 3.0 and pH 5.0. The amount of drug released was determined spectrophotometrically and high performance liquid chromatography. Permeation experiment with terbinafine was performed with the human skin using Franz cells. The antimicrobial activity of terbinafine was tested. Results showed, that NPs with clotrimazole based on polyester branched on tripentaerythritole can be prepared. Polyester branched on polyacrylic acid is suitable for a preparation of NPs with terbinafine. The dissolution tests showed influence of medium pH and type of polyester on velocity of terbinafine release from NPs. Liberation of terbinafine was faster in more acidic medium. Tenside in concentration 0,05 % slowed down liberation of terbinafine. Terbinafine release proceeded more rapidly from polyester branched on dipentaerythritole than from polyester branched on polyacrylic acid. Permeation experiment showed detectable amount of terbinafine in the epidermis, through the skin terbinafine does not penetrate. The antimicrobial activity in vitro of terbinafine loaded in NPs was confirmed.

Key words: terbinafine, clotrimazole, branched PLGA, nanoparticles, dissolution, skin penetration, antimicrobial activity