

ABSTRACT

CHARLES UNIVERSITY IN PRAGUE

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Title of diploma thesis: Aliphatic polyester branched on tripentaerythritol as carrier in the solid dispersions

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Diploma thesis deals with the formulation and evaluation of solid dispersions based on biodegradable polymeric carriers: (i) a linear copolymer of D, L-lactic acid and glycolic acid in a ratio of 1:1 and (ii) a polyester of D, L-lactic and glycolic acids branched on central molecule of tripentaerythritol. Active substances (salicylic acid, miconazole) were incorporated by dissolution and evaporation of the solvent (ethylmethylketone), or by melting method. Liberation and thermal properties of solid dispersions were evaluated. Theoretical part deals with methods of incorporation of the drug into the polymeric carriers, polymer-drug interactions, and medicinal preparations containing salicylic acid and miconazole. The results of thermal analysis of the solid dispersions demonstrated the absence of an amorphous or crystalline state of the drugs. We conclude that the drugs are molecularly dispersed in the polymeric carriers. Addition of 5% salicylic acid occurs mild decrease in glass transition temperature, while the addition of 3% miconazole has an opposite effect. Compared to the release characteristics of linear and branched polyester more suitable carrier is the branched one that releases active ingredient gradually for 4 days after 35 % one-hour burst-effect.

Keywords: polyesters, solid dispersion, drug release, salicylic acid, miconazole, DSC, extemporaneous preparation