

## **ABSTRACT**

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Title of thesis: The release of terbinafine from polyesters branched with polyacrylic acid

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In this rigorous thesis, thermal and release properties of solid dispersions with terbinafine based on polyesters of lactic and glycol acid, branched with different concentration of polyacrylic acid, are studied and presented. Theoretical part summarizes current knowledge about terbinafine and its ways of application, advantages and disadvantages of solid dispersions and selection of a suitable polymeric carrier. In the experiment, solid dispersions were prepared by melting method, or solvent method using methyl-formate. The swelling rate and erosion rate were determined. The active pharmaceutical ingredient was incorporated into the polymer in form of hydrochloric salt or free base form in concentration of 10 %. Dissolution tests of terbinafine at 37 °C and pH 7.4 (phosphate buffer) were performed. Terbinafine concentration was determined spectrophotometrically at wavelength of 223 nm. Thermal analyses of solid dispersions revealed molecularly dispersed drug in concentration of 10 %. Polyesters degradation was running at pH 7,4 for 96 hours. Degradation time was significantly prolonged by incorporation of terbinafine, maybe due to the polymer-drug interaction. About 1 – 3.5 % of incorporated drug was released during 24 hours of dissolution test. The total amount of drug released during 38 days lasting test was 50 % in case using of terbinafine-hydrochloride, and 25 % in case of the base of terbinafine. Drug release from polyester 2A run faster.

**Keywords:** branched polyesters, solid dispersion, terbinafine, drug release, solubilization, DSC, swelling, erosion