

CHARLES UNIVERSITY IN PRAGUE
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Title of diploma thesis: **Aciclovir release from unplasticized polyesters**

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ABSTRACT

The aim of this diploma thesis was the study of aciclovir release from the linear and branched polyesters and measurement of the glass transition temperature (T_g) of polyesters without aciclovir and polyesters with 5 % of aciclovir. Knowledges about the drug release focused on modified drug release and using polymer systems were described in theoretical part. Dissolution testing of aciclovir release from linear polyester matrices of lactic acid and glycolic acid in ratio of 50:50 and 30:70 (PLGA 5/5, PLGA 3/7) and polyester matrices branched with pentaerythritol and tripentaerythritol in concentration of 1 %, 3 % and 5 % (1P, 3P, 5P, 1T, 3T, 5T) were performed in the experimental part. Release of aciclovir was tested at 37 °C. Phosphate-citrate buffer pH 7.4 was used as a dissolution medium. The amount of released drug was determined by spectrophotometry at 256 nm. The results showed that aciclovir was released from linear polyesters by first order kinetics. The liberation of branched polyesters proceeded in three stages. The rapid drug release occurred of polyesters PLGA 5/5, PLGA 3/7 and 5P (till two days). Polyesters of 3T are suitable for long-term drug release (more than 4 weeks). Glass transition temperature of samples PLGA 5/5, PLGA 3/7 and 3T without aciclovir and samples with 5 % of aciclovir was measured using DSC 200 F3 Maia, Netzsch unit. Incorporation of aciclovir into the polyester matrices caused that the glass transition temperature decreased.

Key words: polyesters, dissolution testing, aciclovir release, DSC