

CHARLES UNIVERSITY IN PRAGUE
FACULTY OF PHARMACY IN HRADEC KRÁLOVÉ

Department of Pharmaceutical Technology

Rigorous Thesis

**Adhesive properties of branched oligoesters plasticized with triethyl citrate
and drug release from these carriers**

Mgr. Petra Dvořáková

SUMMARY

The aim of this thesis was the study of adhesive properties of branched terpolymers of D,L-lactic acid, glycolic acid and dipentaerythritol, and release of fluconazole and aciclovir from these carriers. All tested carriers were plasticized with 30% of triethyl citrate (TEC). In the theoretical part of this thesis mechanisms of bioadhesion, biological substrates, polymers used in drug delivery systems and mechanisms of drug release are described. In the experimental part adhesivity of plasticized oligoesters was measured. Hydrated mucin isolated from porcine stomach was used as a model substrate for bioadhesion. The rate of adhesivity is the maximal force F_{\max} [N], which is required for the detachment of tested samples from the substrate. This force was related to the size of the contact surface and expressed in units mN/mm^2 . The highest adhesivity was measured in oligoesters labelled 5D and 8D, which had low dynamic viscosity. However, it is impossible to state linear relationship between adhesivity and dynamic viscosity. The release of fluconazole and aciclovir at 37°C was also studied in experimental part. Phosphate citrate buffer pH 7,0 was used as a medium of drug release. The process of drug release is influenced by molecular weight of carriers. Among tested branched plasticized oligoesters, the oligoesters with higher molecular weight appear to be suitable as drug carriers.