ABSTRACT

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Title of diploma thesis: ***Adhesive properties of thin layers based on plasticized polyesters***
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This diploma thesis deals with rheological, adhesive and dissolution properties of thin layers based on the branched polyester of D,L- lactic acid and glycolic acid, plasticized with methyl-salicylate, and loaded with salicylic acid. The theoretical section describes bioadhesion, its mechanism and theories, *in vitro* adhesive tests focused mainly on the method of rheological synergism, tensile and „wash off" tests. In the experimental section, the flow properties of plasticized polyesters, hydrated mucin from porcin stomach, and their mixtures were studied using absolute rotational rheometer. The analysis of the viscosity curves revealed that plasticized polyesters are Newtonian systems, mucin and its mixtures with polymer have pseudoplastic behaviour. Adhesive properties of the thin layers were established by equation of rheological synergism based on viscosity of polymer, mucin and their mixtures measured at shear rate of 10 s^{-1}. The adhesive properties of thin layers were also determined using tensile test on rheometer, and evaluated as the maximal force, the area under the force/time curve, and the failure time. The adhesion of polymeric thin layers is affected by the viscosity of polymer and the viscosity of mucin. Dissolution test of salicylate from thin layers was performed at 37 °C at pH 7.4. Amount of the salicylate released was determined spectrophotometrically at 298 nm. The course of the drug release was influenced by the viscosity of the thin layer and by the adhesive strength to the mucin substrate.

Key words: PLGA, branched polyesters, methyl-salicylate, thin layers, rheological synergism, mucoadhesion, salicylic acid.