

ABSTRACT

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Title of Thesis **Release, adhesive and rheological properties of branched oligoesters plasticized with dipentaerythritol**

The aim of this rigorous thesis was the study of acyclovir and fluconazole release from oligoesters of lactic and glycolic acids, branched using dipentaerythritol, and their adhesive and rheological characteristics. The theoretical part describes polyesters used in pharmacy and medicine, polylactic acid and plasticizers used in biomedical application. Dynamic viscosity were measured by Brookfield digital viscometer model DV-E. Adhesive properties were measured using material testing machine Zwick/Roel T1-FR050TH.A1K. The maximum force, required to detach the polymer carrier from substrate, was measured for studying this material. Adhesivity of oligoesters plasticized with ethylpyruvate was 59,17–84,94 mN/mm². Liberation was tested at 37°C to the phosphate-citrate medium, concentration of drug in medium was measured by spectrophotometer. There was a decrease of drug liberation from branched oligoesters with increased molar weight. Carrier branched by dipentaerythritol in concentration of 3 % shown the most sufficient properties to prolonged drug release. 80 % of acyclovir was released from this carrier during 17 days. Also the dissolution of fluconazole has uniform level. This branched plasticized oligoesters are Newtonian systems with dynamic viscosity ranged from 3 Pa.s to 25 Pa.s in relation with molar weight and branching.

Keywords: bioadhesion, fluconazole release, acyclovir release, branched polyesters, plastification