

ABSTRACT

CHARLES UNIVERSITY

Faculty of Pharmacy in Hradec Kralove

Department of Pharmaceutical technology

Name of the student: Nikola Hluchníková

Title of diploma thesis: Solid dispersions with terbinafine

Consultant: PharmDr. Eva Šnejdrová, PhD.

The diploma thesis deals with the release of terbinafine base and terbinafine hydrochloride from degradable carrier in three different mediums. The carrier was polyester of lactic acid and glycolic acid branched on polyacrylic acid. The theoretical part is focused on the description of properties of drug substance and branched polyester, the bioavailability of poor soluble substances, the types of polymeric carriers and the release of drugs from solid dispersions, the thermal analysis of polymer, drug and the solid dispersion with the incorporated drug. In the experimental part, solid dispersions were prepared by the melting method, dissolution of the drug in water, phosphate buffer pH 5.5 and pH 7.4 were studied. The amount of released drug was determined spectrophotometrically at 223 nm and HPLC. A thermal analysis of polyester carriers and solid dispersions was performed by the DSC. The amount of drug released was affected by the pH of the environment. Prolonged release of terbinafine hydrochloride is carried out in a pH 7.4 phosphate solution. In case of terbinafine base in phosphate buffered saline pH 5.5. The release of terbinafine hydrochloride was the fastest in water, the terbinafine base in phosphate buffer. Thermal analysis showed an increase in the glass transition temperature of the polymer due to the drug incorporation. Both forms of terbinafine were dissolved in the polyester.

Key words: solid dispersions, terbinafine, branched polyesters, dissolution, DSC.