

ABSTRACT

In the theoretical part of this thesis are described the synthesis, properties and mechanism of biodegradation of aliphatic polymers - polylactic acid, polyglycolic acid and their copolymer PLGA. There are also discussed the possibilities of modifying the properties, such as block copolymer PEG-PLGA synthesis. Summary informations concerning the production and use of biodegradable polymers are also shortly described. The aim of the experimental part was to observe the effect of PLGA polymer matrix size and ionic strength of the aqueous medium on the polymer swelling and erosion. Samples with weight 150 mg and 1000 mg were placed into 37 °C citrate buffer with pH 6. Each of the used mediums had various concentration c [0; 0,125; 0,25; 0,5; 1]. Measurement was carried out in period of 28 days. Values of degree of swelling and of erosion were measured. The pulsion behavior of swelling in both sample sizes was confirmed. However, the sample size has a strong impact on the rate and extent of swelling. It was demonstrated that larger samples disintegrate faster which is explained by a higher rate of autocatalysis within the polymer matrix. The results demonstrated also the effect of ionic strength on erosion when isotonic solution suppressed erosion rate.