SUMMARY

There are summarized the mechanisms of bioadhesion, the substrates for bioadhesion, the bioadhesive polymers, the plasticized polymers, the bioadhesive dosage forms, the polylactic and polyglycolic acid, and the copolymers of lactic and glycolic acid and the drugs (used in the experiment) in the theoretic part of this thesis.

There were studied the adhesive characteristics of plasticized polymers of D,L-lactic and glycolic acid branched with pentaerythritol (P) or tripentaerythritol (T) with the drug in the experimental part of this thesis. As plasticizer there was used triethyl citrate (TEC) in the concentration of 30 % and as drug was used fluconazole in the concentration of 4 %. The adhesivity was measured on the machine T1-FR050TH.A1K from the company Zwick/Roell by these testing parameters: the contact force 10 N, the contact time 60 s and the speed of separation of the sample from the surface 100 mm/min. The adhesion rate is the maximal force F_{max} [N], which is needed for separation of the sample from the surface. As a model base was used the hydrated mucin of pig stomach. The highest adhesivity was measured by carriers with the highest molar mass (greater than 15 000 g/mol). We can't exactly determinate the relationship between adhesivity and the molar mass for the carriers with molar mass of less than 15 000 g/mol. The degree of branching of carriers increases with increasing concentration of branching component (pentaerythritol or tripentaerythritol) in the reaction mixture and only an increase in concentration from 1 % to 3 %. Increasing concentration of branching component to 5 % doesn't get carriers

with a higher degree of branching. The highest adhesivity was measured by carriers with higher degree of branching and with molar mass greater than 15 000 g/mol. We can't exactly determinate the relationship between adhesivity and the degree of branching for the carriers with molar mass of less than 15 000 g/mol. The adhesivity is also influenced by concentration of plasticizer. The adhesive force of carrier decreases with increasing concentration of plasticizer. Comparing the results of adhesion tests with the same systems, but no drugs were found out that the influence of only 4 % of fluconazole isn't significant on the adhesion force.

We had also studied the liberation of fluconazole and aciclovir of plasticized carriers branched pentaerythritol and tripentaerythritol during 20 days. The static dissolution test was performed at 37 °C. As a medium of liberation was selected the phosphate citrate buffer pH 7,0. Fluconazole incorporated into plasticized carriers branched with pentaerythritol was released for 7 days. Fluconazole incorporated into plasticized carriers branched with tripentaerythritol was released more slowly. It was found out that the speed of liberation of fluconazole is influenced by the molar mass of carriers. The liberation of fluconazole is slower from the carriers with higher molar mass.

The liberation of aciclovir went slowly and during 20 days, after when it has been observed, there was no liberation of all drug contained in the carrier. The liberation of aciclovir from the carrier 3P, 3T and 5T went linearly. It was found out that the process of liberation of aciclovir is also influenced by molar mass of carriers.

As a suitable pharmaceutical carriers from the tested branched carriers appear polyesters with higher molar mass, that have higher dynamic viscosity and higher adhesivity by 30 % plastification of triethyl citrate.