

## Abstract

The aim of this diploma thesis was preparation, characterization and determination of encapsulation efficiency of the cationic liposomes composed of dimethyldioctadecylammonium bromide (DDAB) and cholesterol carrying new drug MT05 with an immunoadjuvant effect. The influence of the temperature of sonication bath and the influence of the volume of liposomal suspension on the average size of liposomes and their polydispersity index was monitored. The most effective liposome preparation by sonication bath was at temperature of 60 °C. The volume of liposomes undergoing sonication did not influence the resulting values of the average size of liposomes and their polydispersity index. The time of sonication time was 6 hours and could be shortened by using sonication bath with higher output. The determination of encapsulation efficiency was carried out in three separated experiments by HPLC-MS/MS. The encapsulation efficiency of the cationic liposomes was  $30.1 \pm 8.5$  % in the first experiment,  $43 \pm 25$  % in the second, and  $32 \pm 25$  % in the third. The amount of DDAB was determined only in the liposomes prepared in the third experiment. The amount of DDAB in the purified liposomes was  $78.9 \pm 3.7$  % in the first replicate,  $65.4 \pm 1.8$  % in the second and  $53.8 \pm 1.4$  % in the third. The actual molar ratio of MT05 and DDAB of the liposomes prepared in the third experiment was 1.0:15.8 in the first replicate, 1.0:16.7 in the second and 1.0:20.5 in the third.

**Key words:** liposome, DDAB, immunoadjuvant, encapsulation efficiency, HPLC-MS/MS