CHAPTER V

CONCLUSIONS

Lactic acid liposomes could be prepared from egg yolk lecithin by reverse phase evaporation method. The prepared vesicles were likely LUVs. From electron micrographs, size at the lower end was estimated in the range of 100-500 nm. The percentage of lactic acid entrapment increased with increased phospholipid concentration. However, at a constant phospholipid concentration, the encapsulation efficiency of lactic acid calculated from the number of mole of lactic acid per mole of lipid did not differ with increasing phospholipid concentrations. Increasing lactic acid concentration could increase encapsulation efficiency, which reached a limit at some point between 80-100 mg/ml of lactic acid concentration. Liposomal charge, pH, and ionic strength had interaction effects on encapsulation efficiency ($p<0.05$). At pH 4 (μ=0.1) the encapsulation efficiency of lactic acid in positively charged liposomes was the highest and was similar to that of the neutral liposomes at pH 5 (μ=0.5). Inclusion of cholesterol in both positive and neutral formulations decreased encapsulation efficiency.

The release of lactic acid from liposomes depended on lipid composition and temperature. Lactic acid in positively charged liposomes was released faster than that in neutral liposomes. The presence of cholesterol in both types of liposomes also caused faster release. The release rate increased with increasing temperature.

In terms of stabilty of liposomes, positively charged liposomes were more leaky than neutral liposomes when they were stored in a refrigerator for one week. Leakage of lactic acid from neutral liposomes with cholesterol and α-tocopherol was negligible. Inclusion of cholesterol in both neutral and positive liposomes decreased leakage of lactic acid. Addition of α-tocopherol (0.1 mol%) in

lipid bilayer reduced leakage of lactic acid from the neutral liposomes, which was not seen with the positively charged liposomes . Although the sampling time was short (1 week), these results could indicate the difference between the formulae. The formulation with EPC : Chol (1:1) and α-tocopherol gave the highest percentage of remaining of lactic acid.