CHAPTER V

CONCLUSIONS

The conclusions from this study are as the followings:

1. The temperature induced coacervation technique and the solvent evaporation technique could be used to prepare microcapsules of ascorbic acid which is water-soluble and sensitive to moisture. The former technique gave aggregate and irregular-shaped microcapsules with some pores, whereas the latter technique gave spherical or irregular-shaped microcapsules when Span80 or Tween80 was used as the emulsifier, respectively.

2. For the temperature induced coacervation technique, an increase in core to wall ratio resulted in the smaller mean size of microcapsules due to the less proportion of polymer. Whereas the mean size of microcapsules prepared by the solvent evaporation technique increased with increasing the core to wall ratio due to the more difficulty in dispersing the emulsion system.

3. The drug entrapment and yield of the ascorbic acid microcapsules prepared by the temperature induced coacervation technique were not sensitive to the formulation variables under the conditions studied. Those of the microcapsules prepared by the solvent evaporation technique were influenced by the ethylcellulose concentration, the core to wall ratio, and the concentration of emulsifiers. These

results indicated that both Span80 and Tween80 could partition into the microcapsules, still in different degrees.

4. The drug release rate from microcapsules could be modified by the incorporation of plasticizers or surfactants. Thirty percent of dibutyl sebacate was an appropriate plasticizer for ethylcellulose-walled microcapsules prepared by the temperature induced coacervation technique for a slow release dosage form. For the solvent evaporation technique, an increase in Span80 amount in oil phase resulted in the higher release rate which was associated with the presence of drug crystals on the microcapsule surface. The microcapsules with the slowest release rate were obtained by using 1.5% Tween80 as an emulsifier.

5. The stability study indicated that ascorbic acid in microcapsules with 1.5% Tween80 degraded the fastest. The longer period of time or the more accelerated condition should be used to investigate the effect of microencapsulation on the enhancement of ascorbic acid stability.

6. Microencapsulation of ascorbic acid could be also used for other purposes such as to prolong release of drug to prevent toxic effect from high dose, to prevent incompatibility between ascorbic acid and other drugs, to mask sour taste, etc.