CHAPTER V

CONCLUSIONS

1. The significant increase in solubility of carbaryl, carbaryl 85WP and methidathion as a function of concentrations of G_2-βCD and methyl-βCD was observed.

2. From phase solubility study, Methyl βCD had better potential for complexation with carbaryl 85 WP than other pesticides. Carbaryl 85WP-methyl-βCD gave the highest K_C value of 223.18 M^{-1}.

3. The DSC curve and FTIR spectra support that carbaryl 85WP and methyl-βCD can form a true inclusion complex in solid state prepared by kneaded and freeze-dried methods.

4. Carbaryl 85WP-methyl-βCD solid complex had higher dissolution and faster dissolution rate than free carbaryl. Complexes prepared by freeze-drying was better in dissolution property than those prepared by kneading. Complex formed at the 2:1 guest: host molar ratio gave the best result in most of the cases. Dissolution profiles also depend on temperature used for complex preparation.

5. Methyl-βCD could prevent the carbaryl 85WP from thermal and UV degradation. The thermal stability studies showed that degradation at 40°C of complex during two weeks storage was less than 20%. Loss of carbaryl 85WP by 20-25% at 80°C for 3 hrs. was also observed. The loss of free carbaryl was about 40% in both conditions. UV stability showed similar result.

6. For acute toxicity test on Brine shrimp, carbaryl-methyl-βCD complex exerted a little less toxicity than the parent compound, carbaryl. LC_{50} values of free carbaryl and the complex were 4.48 and 5.05 mg/l, respectively.