

CHAPTER V

CONCLUSION

Results from phase solubility diagram indicated that the stoichiometric ratio of the complex was 1:1 with the formation constant (K_C) was $9.63 \times 10^2 \text{ M}^{-1}$. The existence of complex was confirmed by IR spectra, X-ray diffraction and differential thermal analysis.

The formation of the complex leads to increase stability for the chloramphenicol molecule. The activation energy (E_a) of chloramphenicol and chloramphenicol : β -CD complex were 20.9 kcal/mol and 24.7 kcal/mol respectively. The higher value of activation energy of the complex meant the higher energy required to activate the complex to the excited state. Shelf-life of complex at 33°C , calculated from the Arrhenius plot and apparent specific rate constant, were 10.8-14.0 months and 8.04-11.2 months respectively. The shelf-life at 33°C of free chloramphenicol, calculated from the Arrhenius plot and apparent specific rate constant, were 2.63 - 3.14 months and 2.35 - 2.80 months respectively. The antimicrobial activity test suggested, the formation of the complex do not change the microbial activity of the chloramphenicol.