

CHAPTER V

CONCLUSIONS

This present research study was to develop and evaluate physicochemical properties of hydrophobic base with and without suitable gelling agents. In addition, after obtained an appropriate formula of oral paste suitable herbal extracts, mangostin and/or asiaticoside, were incorporated in the oral paste formulation and conducted for stability testing at various stress conditions. Polymers used in preformulation of hydrophobic base containing mineral oil, polyethylene (PE), polyethylene glycol (PEG) 6000 and polypropylene (PP), respectively. It was found that PE is suitable because PEG 6000 is too polar when compared with mineral oil and PP exhibit too high melting point to employ with mineral oil. In the case of PE polymer the molecular weight between 1000 - 2000 was found to be optimum and various concentrations of PE range of 1.5-6.0 percent were tested to obtain better texture including palatability of the product. The homogeneous hydrophobic base with good physical appearance was prepared by melting process of polyethylene and mineral oil at about 80 ° C. These previous samples were subjected to continuous shear rate under influence of temperatures. Rheograms of hydrophobic base composed of two parts. The first part of the rheogram is upcurve and the other part is downcurve. At concentration of greater than 4.5% of PE the upcurve is characterized by yield point indicating the minimum shear stress required to cause the material to flow. Below this point the material is behaving as a solid. Beyond this point the upcurve is smooth and demonstrates a pseudoplastic characteristic. Viscosity of hydrophobic base containing 4.5 % of polyethylene was also not change enormously when compared with the other percentages after exposed to -20 ° C for 24 hours and 5 cycles of freeze-thaw. Activation energy of hydrophobic base containing 4.5 % polyethylene calculated from modified Arrhenius's equation was about 12.45 kj/mol. Chitosan salts powder prepared by spray-drying process with suitable condition were agglomerate powder with yellowish color, and data from SEM showed that they have round shape. SCMC showed the best gelling agent for moisture adsorption property and swelling index

when compared with the other gelling agents in this study. Chitosan glutamate MW 227000 performed the highest tensile strength when compared with the other gelling agents. In preformulation study it was found that chitosan glutamate MW 227000 provided the bitter taste if formulation have chitosan glutamate MW 227000 more than 10 % w/w. The bitter taste of chitosan glutamate MW 227000 may be due to the nature of its chemical. The appropriate oral paste formulation used in this study composed of hydrophobic base (4.5 % PE), SCMC, chitosan glutamate MW 227000, pectin, BHT and active ingredient (either mangostin or asiaticoside). In photooxidation study it could be concluded that the formulation containing antioxidant like BHT could be protect active ingredient (mangostin or asiaticoside) from photooxidation. From stability studied, mangostin and asiaticoside oral paste were stable under both an ambient temperature and 30 ° C condition for 4 months of storage.