

CHAPTER 5

CONCLUSION

The result from agar diffusion method presented that all samples (MG-1, MG-2 and GU) except the SP extract could inhibit the growth of all tested bacterial strains. The extract from *Garcinia mangostana* Linn. (MG-2) possessed the highest antimicrobial activity, with MIC and MBC values equally to 0.24 mg/ml for MRSA, *S.aureus* and *P.acnes*, respectively which were comparable to benzoyl peroxide (positive control). So, the MG-2 extract was then selected for further development into hydrogel.

The MG-2 extract was incorporated into a stable preformulated gel base as MG-2 gel. The MG-2 gel exhibited no skin irritation after testing by modified Draize Rabbit model and in volunteers. It also showed physicochemical and physical stabilities after storage in 2-8°C and room temperature in dark. Furthermore, the MG-2 gel also indicated the stability of antimicrobial activity after storage in various conditions although it changed to darker color. This implies that a darker color did not affected its activity. In addition, it exhibited significantly higher activity than gel base in both before and after stability test.

The anti-acne activity of MG-2 gel was also evaluated in 21 volunteers by assess the exact number of each lesion type present on the face from ear to ear and above the mandibular line counted separately for each side of the face. A clinical overall change in facial acne of the subjects was evaluated compared to the appearance at the beginning of the study. The percent decreasing of acne from twenty one volunteers after 2 weeks of treatment was 58.9%. The application of MG-2 gel exhibited significant acnes reduction compared to placebo area. This result indicated that the MG-2 gel has the capability to reduce acne and can be used for acne treatment. Skin oiliness decreasing effect of MG-2 gel was also determined in the same volunteers using sebumeter[®]. The decrease in oiliness compared with the

appearance at the beginning of the study 2 weeks of treatment was 62.9%. Application of MG-2 gel significantly reduced oiliness on skin. This result indicated that the MG-2 gel has the capability to reduce on the skin.

This result indicated that the MG-2 extract from *Garcinia mangostana* Linn. possessed the highest antimicrobial activity against acne related microorganisms. Moreover, the use of MG-2 in gel showed good acne reducing capability and also exhibited anti-oil effect on the skin. In conclusion, this study strongly indicated that the MG-2 extract from *Garcinia mangostana* Linn. is a promising natural anti-acne for cosmetic application.