CHAPTER 6: CONCLUSIONS

6.1 CONCLUSIONS

As, the usage of honey been rediscovered, the demand on honey in the market has been rapidly increase all over the world, as well as in Malaysia. Due to the limited availability and also the increasing price of honey, the problem of honey adulteration and synthetic honey exists in the market. Honey purity tests were carried out in this study to confirm the purity of the selected samples. The results from the present study (Chapter 2) showed that the two selected Malaysian Honey (Gelam honey and Nenas honey) met all the characteristics (HMF level, sugar profile, pH value, water content and hydrogen peroxide level) of pure honey from the tropical country. Thus, these two honey were classified and confirm as pure honey and thus, selected as wound dressing for the animal study. [Research Objective 1]

The present study established a quantitative, reliable and easily repeatable protocol for the *in vivo* wound model for wound research (Chapter 3). The wound model and parameters used in this study was suitable for the macroscopic and microscopic evaluation for the efficacy of local Malaysian honey in wound healing. This *in vivo* wound model created could also be used in other wound researches for the development of novel therapy. [Research Objective 2]

Honey is recommended as an effective treatment for wound because of its non-irritating, non-toxic, bactericidal, nutritive, easily applied, comfortable and natural wound dressing. In this study, the wound healing process and the efficacy of selected Malaysian honey (Gelam honey and Nenas honey) towards the wound healing were evaluated macroscopically and microscopically (Chapter 3 and Chapter 4). Results obtained from Chapter 3 showed that the wound healing process was accelerated by the application of wound dressings. Honey dressings used in this study showed similar

effects in accelerating wound healing process, shown by Intrasite gel (modern dressing) approximately 13 days of treatments conventional as wound treated with both honey. Both honey provided the moist healing environment and accelerated the wound contraction, reduced the amount of exudates and necrotic tissue (Chapter 3).[Research Objetive 3].

Besides that, both honey treatments showed acceleration of wound healing compared to normal wound healing. Both Malaysian honey showed similar results in reducing the size of wounds and increasing the rate of contractions in the macroscopic evaluations. This acceleration was contributed by honey through providing a suitable moist environment which favored the healing process. This study also indicated that honey reduced the formation of scab and necrotic tissue [Research Objetive 3].Overall results of Chapter 3 showed that Nenas honey gave better result in wound healing process compared to the Gelam honey [Research Objective 4].

This is the first time that wound healing properties of these honey (Gelam honey and Nenas honey) were being evaluated using the histological methods (Chapter 4).Gelam honey and Nenas honey both produced similar effects in enhancing the wound healing process. The application of honey treatments on the full thickness wound with both honey showed treatment showed an increased in granulation tissue formation, epithelialization, angiogenesis and fibroplasiaswhich contributed to the wound healing process. Results of Chapter 4 showed that Nenas honey gave slightly better result in anti-inflammation while Gelam honey showed better result in accelerating epithelialization [Research Objective 5].

In conclusion, both Gelam honey and Nenas honey have the potential in reducing the inflammation and scarring. Both honey also help in cellular regeneration. Although, Intrasite gel gave similar effects of the healing process it is more expensive in cost. Thus, honey still can be considered as the in expensive and effective treatment for full thickness excisional wound. Due to the accessibility of honey and the inexpensive price compared to modern wound dressing, honey is recommended to be used as a wound dressing.