

CHAPTER 5

CONCLUSIONS

Identification and quality control of herbal medicine's raw materials are very important for herbal products to be safety, quality and efficacy. The standard data of each plant is established in monograph of medicinal plant. However there are some plants have never been identified. Therefore data for identification and quality control of new medicinal plant should be studied before product development. Pharmacognostic study including macroscopic and microscopic characteristic study, leaf constant and specification of *T. catappa* Linn. red leaves raw materials were a fundamental data for *T. catappa* Linn. red leaves and for product development in this study. Moreover antioxidant and anti-inflammatory activities of its extract play a role key in development of anti-inflammatory gel containing the extract.

From the analysis of *T. catappa* Linn. red leaf extract, we found gallic acid (2,577 mg/kg of the extract), quercetin (708 mg/kg of the extract) and ursolic acid, as shown in the Appendix E. They play the main role in antioxidant and anti-inflammatory activity. Hydroxyl radical scavenging activity correlates to anti-inflammatory activity as hydroxyl radical is an important radical which presents and destroys tissues during inflammatory responses. The 95% of ethanol *T. catappa* Linn. red leaf extract possesses strong scavenging activity on hydroxyl radical and significantly exhibited anti-inflammatory on EEP-induced ear edema in rat model. The anti-inflammatory gel containing the extract was developed, only formula number 1, 2 and 5 were chosen. We found that bioactive compounds were released from formula number 1 and formula number 5 more than formula number 2. These 3 formulas were then kept under 4°C for 3 months. The results showed that formula number 1 was passed long term stability test.

The Pharmacognostic data can be used for identification and quality control step of tea product from *T. catappa* Linn. red leaves. The developed gel from this study possessed *in vitro* antioxidant activity and *in vivo* anti-inflammatory activity which was stable and the bioactive compound was able to release from the gel.

However the data from pharmacognostic study is the specification of Hu-Kwang raw materials for this study, the standard monograph should be established. Moreover, further study should optimise isolation of the extract to obtain suitably applicable and acceptable topical gel preparation from *T. catappa* Linn. red leaf extract for inflammatory related diseases such as dermatitis and arthritis. The formulation should be more evaluated *in vivo* study on anti-inflammatory and *in vitro* permeation test using membrane mimic the human skin.