CHAPTER V
CONCLUSION

In the study of lychee (*Litchi chinensis* Sonn.) seed extraction method found that the ethyl acetate part and the 85% ethanolic part of lychee seed extract in extraction method 3 gave the strong antioxidant activity when determined with DPPH assay. So five cultivars of lychee seed cultivated in northern Thailand, O-hia, Kwangchoa, Chakrapad, Hong-hua and Kim Cheng, were extracted and compaired the antioxidant activities by DPPH assay, ABTS assay and TBARS assay. The results shown that the ethyl acetate part of five cultivars of lychee seed extract had the higher antioxidant activities than ethanolic extract and Kim cheng was the cultivars that had the highest antioxidant activities. The total phenolic content study presented the corresponding to the antioxidant activities. The ethyl acetate part of lychee seed extract had more total phenolic content than ethanolic part and Kim Cheng was the cultivars that had the highest total phenolic content. The chromatographic finger print of lychee seed extract by HPLC at wavelength 280 nm found that ethanolic part and ethyl acetate part had the same finger print. They had six major peaks at retention time 19.6, 21.0, 24.1, 25.3, 26.0 and 27.7 minute.

The two parts of lychee seed extract were then incorporated into O/W cream base as anti-wrinkle cream. The lychee extract creams exhibited no irritation after tested by modified Draize model in rabbit and in healthy volunteers. So the lychee seed extract creams were storage in stress condition (heating-cooling cycling, for six cycles) for stability test. Furthermore, the lychee seed extract cream significantly higher antioxidant activity than cream base in both before and after stability test. In addition it exhibited the stability of activity after storage by freeze-thaw cycling (no significant difference, $P< 0.05$).

The wrinkle reducing capacity of lychee seed extract creams were also evaluated in 24 volunteers by Skin Visiometer® then analyzed in four parameters (roughness-Ra, Rz; Volume, surface). After eight weeks of application found that the

anti-wrinkle cream of two part of lychee seed extract showed significantly wrinkle reducing capacity compared with before treatment ($P< 0.05$, pair t-test). Inaddition, they produced considerable wrinkle reducing efficacy in all assessed parameters at the end of treatment, with a significantly different when compeer with the untreated area and placebo area and the results presented that ethanolic part of lychee seed extract cream had no significantly difference wrinkle reducing capacity compared with ethyl acetate part of lychee seed extract cream ($P<0.05$, ANOVA).

From the results can be standardized the lychee seed extract for application in anti-wrinkle cosmetic. It was divided into two parts. First, quality control of raw material, dry lychee seed powder, was determined the moisture content not more than 5.50% (w/w), ethanol-soluble extractive not less than 0.5% (w/w), chloroform-soluble extractive not less than 0.2% (w/w), total ash should be during 1.90-2.30% (w/w), acid-insoluble ash should be during 0.01-0.06% (w/w). The chemical properties of lychee seed extract was determined the antioxidant properties with IC_{50} not more than 1.25 mg/ml (TBARS method), total phenolic content with GAE not less than 0.20 mg of gallic acid/ 1 mg of sample and chromatographic finger print by HPLC had six major peaks at retention time 19.6, 21.0, 24.1, 25.3, 26.0 and 27.7 minute.

This is the first study about the extracts from seed of Lychee cultivated in northern Thailand. They presented potent antioxidant activity which can be used as one source of natural antioxidant appears to be an alternative to use of synthetic antioxidants. These results will be further identify the compound containing in the lychee seed extract and investigated for the development into anti-aging cosmetic products.