

CHAPTER 5

CONCLUSION

The 50% ethanolic raw betel nut seed extract from microwave assistance was found having the highest EPC, EFC, and ECC with values of 226.58 mg GAE/g sample, 140.79 mg QE/g sample, and 67.23 mg CE/g sample, respectively. This extract also exhibited the highest antioxidant capacities of 495.51, 908.39 and 383.17 mg TEAC/g sample when determined by DPPH, ABTS and FRAP assays, respectively. The lipid peroxidation and tyrosinase inhibitory activity of 60.51 mg BHTE/g sample and 348.81 mg KAE/g sample were obtained. The lower bioactivities were obtained from ripe seed extract. The pericarp possessed lower activity than seed part. In contrast, ripe stage of pericarp exhibited higher bioactivities than the raw pericarp. The microwave-assisted extraction method exhibited the significantly higher extraction potential.

Amongst the fractions from solid-liquid extraction, acetone extract possessed the highest EPC, EFC, and ECC of 82.39 mg GAE/g sample, 12.71 mg QE/g sample, and 1.51 mg CE/g sample, respectively. The most powerful antioxidant capacity was also obtained from the acetone fraction exhibiting 20.76 and 14.31 mg TEAC/g sample when assayed by DPPH and FRAP method, respectively. The first fraction of hexane and the last fraction of water exhibited lowest bioactive compounds and activities. The HPLC chromatogram showed the major components of raw betel nut seed were catechin-like compounds.

The stability test of the extract found that when the pH and temperature storages increased, the color of extract solution more intense. The raw betel nut seed extract retained residual EPC and radical scavenging activity at pH 4-6 and 8-10, especially when storing at low temperature.

The formula containing 0.5% raw betel nut seed extract retained more than 90% residual EPC after 3 accelerated cycles. The residual antioxidant activity of 90.78 and 102.35% were investigated. The EPC and antioxidant were stable more at the storage at 4°C and room temperature than at 50°C storage. The study revealed the potentially use of *A. catechu* Linn. fruit as the antioxidant, whitening, and anti-bacterial agent in cosmetic product. The using of betel nut is also present the sustainable development and value-adding to Thai agricultural product.