Chapter 5
Conclusions

The fresh rhizome of *Boesenbergia pandurata* (Roxb.) Schltr. were purchased in Hat-Yai Plaza main fresh market, Hat-Yai, Songkhla, Thailand, was extracted with ethanol. Upon chromatographic separation the crude ethanolic extract yielded five compounds, three flavanones; pinostrobin (1) pinocembrin (3) and alpinetin (5), one chalcone; cardamonin (4) and a terpenoid; β-sitosterol. The compounds were identified on the basis of spectroscopic method, for example, UV, MS, IR and NMR.

Antioxidant activities of the crude ethanolic extract was assessed by measuring ability to scavenge 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals and to inhibit the autoxidation of linoleic acid *in vitro*. The radical scavenging activity of *B. pandurata* ethanolic extracts was evaluated *in vitro* with a spectrophotometric method based on the reduction of an alcoholic 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical solution at 520 nm in the presence of a hydrogen donating antioxidant. As for pure compounds, pinocembrin had the highest capacity to quench DPPH radicals (EC_{50} 297 μg/ml), while pinostrobin, alpinetin, cardamonin and β-sitosterol had EC_{50} value more than 500 μg/ml. The average EC_{50} for crude ethanolic extract of *B. pandurata* was 67.7 ± 2.6 μg/ml. The percent inhibition of lipid oxidation by the linoleic acid assay of the ethanolic extract was 64.4%. The results indicated that *B. pandurata* rhizome are a good source of natural antioxidants. Antioxidant activity has been known for several beneficial health

effects. Additional information on their bioavailability after various processes of formulation is required.

This study was to set up RP-HPLC method with photodiode array detection to identify and quantify the constituents in *B. pandurata*. Sample was extracted with ethanol. The analyses were carried out on a Apollo® C18 column (250 x 4.6 mm I.D., partical size 5 μm) with 0.5% aqueous acetic acid:acetonitrile (45:55) as mobile phase at flow rate of 1 ml/min and 280 nm detection. This method allowed the identification and quantification of pinostrobin, pinocembrin, cadamonin and alpinetin presented in *B. pandurata* with analysis time of 26.0 min. The calibration curve was linear and reproducible for the assay of pinostrobin. This method can be applied for quality control when *B. pandurata* is used either as raw material or an ethanol extract.