

CHAPTER 4

CONCLUSIONS

4.1 Structure Elucidation/ Structural Characterization

Chromatographic separation of the hexane extract by silica gel column chromatography resulted in the isolated of four compounds; coronarin E (**61**), (*E*)-15,16-bisnorlabda-8(17),11-diene-13-one(**27**), a mixture of β -sitosterol (**62**) and stigmasterol (**63**) and stigmast-4-en-3-one (**64**). Four compounds; (+)-nerolidol (**21**), 16-hydroxyabda-8(17), 11, 13-trien-15, 16-olide (**65**) villosin (**66**) and 5,6-dehydrokawain (**67**) were isolated from CH₂Cl₂ extract. Coronarin E (**61**) were also isolated from the MeOH/CH₂Cl₂ extract. Their structures were identified by spectroscopic techniques including EIMS, IR, 1D and 2D NMR and by comparison of spectroscopic and some physical data with those of the reported compounds. All identified compounds were reported for the first time in this plant.

4.2 Biological Activities

The isolated compounds, (*E*)-15,16-bisnorlabda-8(17),11-diene-13-one (**27**), coronarin E (**61**), 16-hydroxyabda-8(17), 11, 13-trien-15, 16-olide (**65**) and villosin (**66**) were tested for antimycobacterial activity and cytotoxic activity (human oral epidermoid carcinoma (KB), human breast cancer (BC), lung cancer (HCl-H187) and vero cells). For the antimycobacterial assays, compounds **65** and **61** exhibited moderate activity against *Mycobacterial tuberculosis* (MIC 6.25 and 12.50 μ g/mL, respectively), while compounds **27** and **66** were inactive. For cytotoxic activity,

compounds **65**, **66** and **61** exhibited strong to moderate activity against the KB cells (IC_{50} 0.91, 4.10 and 9.67 $\mu\text{g/mL}$, respectively). Compounds **27** showed weak cytotoxicity against the KB cells. For NCI-H187 cells the results indicated that compound **66** and **65** showed the highest activity (IC_{50} 0.12 and 0.72 $\mu\text{g/mL}$, respectively) whereas compounds **61** and **27** showed weak activity against NCI-H187 cells (IC_{50} 21.67 and 25.72 $\mu\text{g/mL}$, respectively). It should be noted that compound **65** was very toxic to Vero cells (IC_{50} 5.37 $\mu\text{g/mL}$), whereas compound **66** was non-cytotoxic to Vero cells. From the overall results, it could be concluded that among the tested compounds, compounds **65** and **66** were the most active against KB, BC and NCI-H187 cells.