CHAPTER V

CONCLUSION

Investigation of chemical constituents from the leaves, wood and stem bark of *Chisocheton penduliflorus* (family Meliaceae) led to the isolation of fifteen compounds including six triterpenoids, three sesquiterpenoids, two coumarins, two phenolic compounds, a chromone and a sterol. A hexanortriterpenoid, hollongdione and a dammarane-type triterpenoid, dammaradienone, were obtained from the hexane extract of its leaves. Four other dammarane-type triterpenoids, namely, cabraleadiol, cabralealactone, cabraleahydroxylactone and eichlerialactone (3,4-secodammarane-type triterpenoid), were isolated from the $CHCl_3$ extract of its wood. $CHCl_3$ extracts of its leaves and stem bark and hexane extract of its wood also yielded cabraleadiol. A new aromadendrane-type sesquiterpenoid trivially named 14-hydroxyepiviridiflorol was obtained from the $CHCl_3$ extract of its wood as a 3:2 mixture with 14-hydroxyviridiflorol. The $CHCl_3$ extract of its wood also yielded (-)-10β,13,14-trihydroxy-*allo*-aromadendrane, vanillic acid, two 6,7-dioxygenated coumarins, scoparone and scopoletin, and a sterol glucoside, β-sitosterol glucoside. Hexane extract of its stem bark also yielded 14-hydroxyviridiflorol, as well as a chromone compound, 5-hydroxy-7-methoxy-2-pentylchromone. The more polar $CHCl_3$ extract of *C. penduliflorus* stem bark also gave cabraleahydroxylactone, scoparone, β-sitosterol glucoside, along with another phenolic compound, ethyl orsellinate.

Phytochemical study on the leaves, pericarp and seeds of another meliaceous plants, cf. *Aglaia erythrosperma*, afforded ten known compounds including six triterpenoids, two coumarins, an aglalactone derivative and a flavagline derivative. $CHCl_3$ extract of its leaves yielded scoparone and an aglalactone derivative, 5,6-desmethylenedioxy-5-methoxy-aglalactone. Hexane extracts of its leaves, pericarp, seeds and $CHCl_3$ extract of its pericarp yielded cabraleadiol and cabraleahydroxylactone. A 3,4-secodammarane-type triterpenoids, ethyl eichlerianoate, was isolated from the hexane extract of its pericarp. This extract also yielded eichlerialactone. Another 3,4-dammarane triterpenoid, aglinin A, and scopoletin were obtained from the more polar $CHCl_3$ extract of the same plant part. Hexane extract of its seeds further yielded cabralealactone and eichlerialactone. In addition, a flavagline derivative, 4′-demethoxy-3′,4′-methylenedioxy-methyl

rocaglate, was isolated from both $CHCl_3$ and MeOH extracts of its seeds. Therefore, the flavagline could be considered as a chemotaxonomic marker of the *Aglaia* spp.

Chemical constituents from both plants were evaluated for a number of biological activities e.g. antituberculosis, antimalarial, anti-herpes simplex virus type 1 and cytotoxicity to cancer cell lines. Both 4′-demethoxy-3′,4′-methylenedioxy-methyl rocaglate and aglinin A displayed cytotoxic effect against all three cancer cell lines tested (NCI-H187, KB and BC), with IC_{50} values in the range of 0.11-8.72 μg/ml, whereas ethyl eichlerianoate was moderately cytotoxic to only the NCI-H187 cell line (IC_{50} = 5.10 μg/ml) and also showed antituberculosis activity (MIC = 25 μg/ml). The flavagline also exhibited antimalarial (EC_{50} = 7.30 μg/ml), antituberculosis (MIC = 50 μg/ml) and moderately active against HSV-1. Futhermore, ethyl eichlerianoate and 5,6-desmethylenedioxy-5-methoxy-aglalactone exhibited antituberculosis activity with MIC value of 25 μg/ml. The latter compound, also displayed moderate cytotoxicity against NCI-H187 cell line (IC_{50} = 7.22 μg/ml), weak cytotoxicity against BC cell line (IC_{50} = 14.37 μg/ml) and moderate anti HSV-1 activity.

The biological activities of four dammarane-type triterpenoids isolated in this study have not been previously reported. These triterpenoids, including cabraleadiol, cabraleahydroxylactone, eichlerialactone and cabralealactone, were weakly cytotoxic to only the BC cell line (IC_{50} = 17.51, 18.01, 12.52 and 16.92 μg/ml, respectively). Only cabralealactone was moderately active against NCI-H187 cell line with IC_{50} value of 7.64 μg/ml. These compounds also displayed antituberculosis activity (MIC = 50, 50, 25 and 50 μg/ml, respectively). Three isolated aromadendrane sesquiterpenoids exhibited only antituberculosis activity (MIC = 50, 100 and 50 μg/ml, respectively).