

## CHAPTER 4

### CONCLUSION

The bark of two Malaysian *Alstonia* species : *Alstonia spatulata* Bl. and *Alstonia macrophylla* Wall. were extracted for alkaloids by chemical extraction procedure. The yield of the crude alkaloid extract from the *A. spatulata* Bl. bark was very much lower compared to the yield from the *A. macrophylla* Wall. bark.

Two alkaloids were isolated from the bark of *A. spatulata* Bl. and identified by spectroscopic methods as Leuconoxine [76] (AS1) and a methoxy epi-echitamidine type alkaloid (AS2). Leuconoxine is an alkaloid of the Plumeran skeletal type, whilst the alkaloid AS2 is of the Strychnan skeletal type.

The bark of the *A. macrophylla* Wall. afforded eleven alkaloids and they were identified by spectroscopic methods as : Talcarpine [54] (AM1),  $N_b$ -Methyl- $N_b$ , 21-secotalpinine [78] (AM2), Alstophylline [6] (AM3), 19,20-Dehydro-10-methoxytalcarpine [80] (AM4),  $N_b$ -Demethylalstophylline oxindole [59] (AM5),  $N_b$ -Demethylalstophyllal oxindole [81] (AM6), Alstonisine [58] (AM7), Alstonal [82] (AM8), Pleiocarpamine [3] (AM9), Villalstonine [10] (AM10), Macralstonine hydroxyketone [83] (AM11). Of the eleven alkaloids  $N_b$ -demethylalstophyllal oxindole [81] (AM6) and alstonal [82] (AM8) are new oxindole alkaloids.

All of the eleven alkaloids isolated from *A. macrophylla* are of the Corynanthean (C) skeletal type. Of these, talcarpine [54] (AM1),  $N_b$ -methyl- $N_b$ , 21-secotalpinine [78] (AM2), alstophylline [6] (AM3), 19,20-dehydro-10-methoxytalcarpine [80] (AM4) all fall under the macroline (C5e) skeletal type; whilst  $N_b$ -demethylalstophylline oxindole [59] (AM5),  $N_b$ -demethylalstophyllal oxindole [81] (AM6), alstonisine [58] (AM7), alstonal [82] (AM8) are macroline related

oxindoles (C6e) skeletal type. Villalstonine [10] (AM10) and macralstonine hydroxyketone [83] (AM11) are both dimeric alkaloids with monomeric macroline type units. Pleiocarpamine [3] (AM9) belonging to the C4f skeletal type is the other monomeric unit of villalstonine [10] (AM10) . The presence of these macroline skeletal type alkaloid in *A. macrophylla* Wall. (which belongs to the *Monuraspermum* sect.) concurs with macroline as a real marker of the *Monuraspermum* sect. *Alstonia* species.