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In chapter I, the chemical investigation of alkaloidal fraction of the root extract of *Cyclea barbata* (Menispermaceae) resulted in the isolation of two known bisbenzylisoquinolines: (+)-tetrandrine, (+)-thalrugosine, and the known *seco*-bisbenzylisoquinoline: (–)-*O*-methylpunjabine. Moreover, the (+)-tetrandrine showed cytotoxicity against KB cell lines. (+)-Tetrandrine, (+)-thalrugosine and (–)-*O*-methylpunjabine structures were elucidated on the basis of spectroscopic technique and confirmed by degradation reaction with ceric ammonium nitrate.

In chapter II, the hexane extracts of twigs of the *Mammea siamensis* (Guttiferae) were investigated and seven new coumarins were isolated. These were 4-(1-acetoxypropyl)-6,6-dimethyl-9-hydroxy-10-(3-methyl-1-oxobutyl)-2*H*,6*H*-benzo[1,2-*b*:3,4-*b'*]dipyran-2-one (**1**), 4-(1-acetoxypropyl)-6,6-dimethyl-9-hydroxy-10-(2-methyl-1-oxobutyl)-benzo[1,2-*b*:3,4-*b'*]dipyran-2-one (**2**, **3**), 4,5-dihydro-8-hydroxy-5-methyl-9-(3-methyl-1-oxobutyl)-7-(3-methylbut-2-enyl)-2*H*-benzo[1,2-*b*:3,2-*b'*]dipyran-2-one (**4**), 4,5-dihydro-8-hydroxy-5-methyl-9-(2-methyl-1-oxobutyl)-7-(3,7-dimethyl-2,6-octadienyl)-2*H*-benzo[1,2-*b*:3,2-*b'*]dipyran-2-one (**5**), 5-hydroxy-8-(1-hydroxy-1-methylethyl)-6-(3-methyl-1-oxobutyl)-4-phenyl-2*H*-furo[2,3-*h*]-1-benzopyran-2-one (**6**) and 5-hydroxy-8-(1-hydroxy-1-methylethyl)-6-(2-methyl-1-oxobutyl)-4-phenyl-2*H*-furo[2,3-*h*]-1-benzopyran-2-one (**7**). In addition, the known mammea coumarins, A/AC cyclo D (**8**), A/AA cyclo D (**9**), A/AD cyclo D (**10**), A/AB cyclo D (**11**), A/AD cyclo F (**12**), A/AC cyclo F (**13**), A/AB cyclo F (**14**), A/AA cyclo F (**15**) and B/AC cyclo F (**16**) were also found. However, this is the first study in which these compounds, except for compound **8**, reported to be isolated from this plant. The coumarin **2** was diastereomer of coumarin **3** but the absolute and relative configuration of these two compounds have not yet been investigated. Both coumarins **4** and **14** were individually isolated as inseparable mixtures of two isomers. The structure of all coumarins isolated were determined by spectroscopic methods.