

## A CONTRIBUTION TO THE THAI PHYTOCHEMICAL SURVEY. II.

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### Abstract

As a continuation of our previous work, an additional 92 species representing 83 genera and 42 families have been located on 3 islands Southern Thailand and tested for alkaloids in the field. 11 species representing 11 genera and 10 families gave positive tests for alkaloids.

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Recently, we reported our first contribution to the Thai phytochemical survey<sup>1</sup> in which plants were selected from the field and screened for alkaloids using the Culvenor and Fitzgerald procedure<sup>2</sup>. We now wish to report the second series of results obtained by the same procedure.

Plants used in this work were collected from Tarutao National Park which consists of four large islands (Tarutao, Adang, Rawi and Lipe) and about 45 small islands. These islands lie from 25 to 75 km off the southwest coast of Thailand and are part of Satun Province. The results of the screening for alkaloids are set out in Table 1 and 2.

TABLE 1. SPECIES GIVING A POSITIVE TEST FOR ALKALOIDS

Family	Herbarium No.	Species
Annonaceae	C 196	<i>Stelechocarpus cauliflorus</i> (Scheff.) R.F.
Euphorbiaceae	C 373	<i>Antidesma</i> sp.
Lauraceae	C 261	<i>Litsea grandis</i> Hook
Leguminosae	C 96	<i>Cassia timoriensis</i> DC.
	C 304	<i>Sophora tomentosa</i> L.
Menispermaceae	C 371	<i>Tiliacora triandra</i> Diels
Oleaceae	C 236	<i>Myzopyrum</i> sp.
Rhizophoraceae	C 204	<i>Bruguiera sezangula</i> (Lour.) Poir
Rutaceae	C 144	<i>Glycosmis pentaphylla</i> (Retz) Corr.
Verbenaceae	C 224	<i>Premna corymbosa</i> Rottl. et Willd.
Vitaceae	C 123	<i>Vitis discolor</i> (Bl.) Delz.

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TABLE 2: SPECIES GIVING A NEGATIVE TEST FOR ALKALOIDS

Family	Herbarium No.	Species
Acanthaceae	C 203	<i>Peristrophe roxburghiana</i> (Schult.) Bremek.
Adiantaceae	C 38	<i>Adiantum philippense</i> L.
Anacardiaceae	C 384	<i>Bouea oppositifolia</i> (Roxb.) Meisn.
	C 381	<i>Buchanania arborescens</i> (Bl.) Bl.
Blechnaceae	C 254	<i>Blechnum orientale</i> L.
Boraginaceae	C 173	<i>Cordia subcordata</i> Lamk
Celastraceae	C 470	<i>Euonymus javanicus</i> Bl.
	C 365	<i>Hippocratea nigricaulis</i> Ridl.
	C 358	<i>Microtropis cf. bivalvis</i> (Jack) Wall.
Combretaceae	C 150	<i>Lumnitzera littorea</i> (Jack) Voigt.
Compositae	C 290	<i>Mikania cordata</i> (Burm f.) B.L. Robinson
	C 44	<i>Vernonia curtisii</i> Craib
	C 62	<i>Vernonia rupicola</i> Ridl.
Connaraceae	C 479	<i>Cnestis palala</i> (Lour.) Merr.
Convolvulaceae	C 93	<i>Argyrea mollis</i> (Burm. f.) Choisy
	C 206	<i>Ipomoea aquatica</i> Forsk
	C 52	<i>Ipomoea gracilis</i> R. Br.
	C 53	<i>Ipomoea stolonifera</i> (Cyr.) Gmel.
Cycadaceae	C 101	<i>Cycas pectinata</i> Griff.
Cyperaceae	C 428	<i>Fuirena umbellata</i> Rottb.
Dipterocarpaceae	C 77	<i>Hopea ferrea</i> Laness.
	C 309	<i>Vatica odorata</i> (Griff.) Sym.
Ebenaceae	C 240	<i>Diospyros undulata</i> Wall. ex G. Don
	C 430	<i>Diospyros variegata</i> Kurz.
	C 472	<i>Diospyros wallichii</i> King & Gamble ex King
Euphorbiaceae	C 469	<i>Agrostistachys gaudichaudii</i> Muell. Arg.
	C 427	<i>Antidesma velutinsum</i> Bl.
	C 444	<i>Breynia reclinata</i> Hook.
	C 143	<i>Bridelia tomentosa</i> Bl.
	C 170	<i>Chaetocarpus castanocarpus</i> Thwaites
	C 467	<i>Claoxylon longifolium</i> (Bl) Endl. ex Hassk.
	C 370	<i>Glochidion cf. eriocarpum</i> Champ.
	C 447	<i>Macaranga gigantea</i> (Reichb. f. & Zoll.) Muell-Arg.
	C 258	<i>Macaranga tanarius</i> (L.) Muell-Arg.
	C 208	<i>Sauropus androgynus</i> (L.) Merr.
	C 328	<i>Suregada multiflora</i> (A. Juss.) Baill.
Goodeniaceae	C 54	<i>Scaevola taccada</i> (Gaert.) Roxb.
Leguminosae	C 257	<i>Fagraea ceilanica</i> Thunb.
	C 64	<i>Bauhinia pottsii</i> G. Don
	C 169	<i>Caesalpinia bonduc</i> (L) Roxb. emend. Dandy & Exell
	C 486	<i>Peltophorum pterocarpum</i> (DC.) Backer
	C 43	<i>Tamarindus indica</i> L.
	C 47	<i>Desmodium rugosum</i> Prain
	C 58	<i>Tephrosia subamoena</i> Prain

TABLE 2: SPECIES GIVING A NEGATIVE TEST FOR ALKALOIDS (Continued)

Family	Herbarium No.	Species
	C 443	<i>Dalbergia candenatensis</i> (Dennst.) Prain
	C 172	<i>Desmodium umbellatum</i> DC.
	C 227	<i>Desmodium vestitum</i> Baker
	C 433	<i>Moghania strobilifera</i> (L.) St. Hil.ex.O.K.
	C 71	<i>Pongamia pinnata</i> (L.) Pierre
Loranthaceae	C 272	<i>Dendrophloe pentandra</i> (L.) Miq.
	C 450	<i>Macrosolen cochinchinensis</i> (Lour.) Tiegh.
Malvaceae	C 114	<i>Abelmoschus moschatus</i> Medic.
Marattiaceae	C 361	<i>Angiopteris evecta</i> (Forst.) Holttm.
Melastomaceae	C 67	<i>Osbeckia chinensis</i> L.
Moraceae	C 412	<i>Artocarpus dadah</i> Miq.
	C 37	<i>Ficus superba</i> Miq.
	C 283	<i>Streblus glaber</i> (Merr.) Corner
	C 284	<i>Streblus ilicifolius</i> (Vidal) Corner
Myristicaceae	C 181	<i>Horsfieldia irya</i> (Gaertn.) Warb.
Myrtaceae	C 477	<i>Decaspermum fruticosum</i> J.R. & G. Forst.
	C 366	<i>Eugenia claviflora</i> Roxb.
	C 513	<i>Eugenia operculata</i> Roxb.
Ochnaceae	C 402	<i>Gomphia serrata</i> (Gaertn.) Kanis
Oleaceae	C 332	<i>Olea cf. brachiata</i> (Lour.) Merr.
Rhizophoraceae	C 391	<i>Bruguiera parviflora</i> (Roxb.) W & A. ex Griff.
	C 134	<i>Rhizophora mucronata</i> Lmk.
Rubiaceae	C 28	<i>Guettarda speciosa</i> L.
	C 397	<i>Hypobathricum racemosum</i> (Roxb.) Kurz
Rutaceae	C 496	<i>Micromelum hirsutum</i> Oliv.
Santalaceae	C 387	<i>Scleropyrum wallichianum</i> (Wight et. Arn) Arn.
Scrophulariaceae	C 120	<i>Adenosma hirsutum</i> Kurz.
Smilacaceae	C 475	<i>Smilax cf. leucophylla</i> Bl.
Sapindaceae	C 299	<i>Erioglossum rubiginosum</i> (Roxb.) Bl.
Sterculiaceae	C 86	<i>Helicteres angustifolia</i> L. var <i>obtusa</i> King l.c.
	C 295	<i>Sterculia</i> sp.
Tiliaceae	C 138	<i>Triumfetta rhomboidea</i> Jacq.
Ulmaceae	C 279	<i>Celtis philippensis</i> Blanco
Verbenaceae	C 390	<i>Avicennia officinalis</i> L.
	C 39	<i>Clerodendrum inerme</i> Benth.
	C 451	<i>Gmelina elliptica</i> J.E. Smith
Zingiberaceae	C 500	<i>Zingiber spectabile</i> Griff.

In general, fresh leaves and soft stems (2-4 g) were ground in an unglazed mortar with sufficient clean sand and chloroform to yield a thick slurry. 0.05 N ammoniacal chloroform (10 ml) was then added, and the mixture was stirred for 1 min before being filtered through paper into a test tube. The chloroform layer was then shaken vigorously with 2N aq. H<sub>2</sub>SO<sub>4</sub> (0.5 ml) and the mixture was allowed to stand until two layers had separated. The upper acid layer was then removed

with a dropper containing a plug of cotton wool in the tip to act as a filter. The clear acid layer was then treated with a drop of Mayer's reagent which had been prepared by dissolving mercuric chloride (1.36 g), and potassium iodide (5.0 g) in water (100 ml). If a heavy precipitate was obtained on the addition of Mayer's reagent the test was judged to be positive.

Table 1 lists (in alphabetical order of family and genus) those species which gave positive tests for alkaloids and Table 2 similarly lists those species which gave negative tests. Altogether 93 species were identified and tested and in all cases voucher specimens have been lodged in the Herbarium of the Biology Department at Prince of Songkla University. Most species were identified by reference to the Floras of the Malay Peninsula<sup>3</sup>, Java<sup>4</sup> and India<sup>5</sup>.

Of the species listed in Table 1, *Tiliacora triandra* Diels was investigated. This has led to the isolation of tiliacorinine, tiliacorine, nortiliacorinine A and a new alkaloid tiliacorinine *N*-oxide from the root of the species<sup>6</sup>.

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### บทคัดย่อ

จากการสำรวจพืชบนเกาะในภาคใต้ 3 เกาะ ได้พบพันธุ์ไม้เพิ่มเติมจากรายงานฉบับที่แล้ว 93 ชนิด จัดอยู่ใน 84 สกุลและ 45 ตระกูล ในจำนวนนี้มีพันธุ์ที่มีแอลคาลอยด์ประกอบอยู่ 11 ชนิด ซึ่งจัดอยู่ใน 11 สกุลและ 10 ตระกูล