

CHAPTER I



INTRODUCTION

Lauraceae is a family belonging to order Laurales (Bentham and Hooker, 1967). The family includes about 40 genera and 13,000 species (Porter, 1967) of largely tropical parts and are most abundant in southeastern Asia and tropical America, while a few species can be found in warm temperate regions (Benson, 1959).

Mostly evergreen (deciduous in temperature regions), sometimes dioecious, trees or shrubs (except *Cassytha*, a twining parasitic perennial herb with leaves reduced or absent), bark and foliage usually aromatic ; leaves usually alternate, occasionally opposite or subopposite, simple, usually entire, mostly penninerved, usually punctate and coriaceous, exstipulate ; flowers in usually axillary, occasionally subterminal, panicles, spikes, racemes, or umbels ; generally bisexual, sometimes unisexual, actinomorphic, mostly 3-merous, small, greenish yellowish or white, the perianth biseriate, of usually 6 basally connate, usually undifferentiated sepallike segments, deciduous or persistent, the tube usually persisting as a cupule at base of fruit ; the androecium typically of 4 whorls of 3 stamens each, adnate to perianth tube, the innermost usually reduced to staminodes (sometimes only a single whorl remains functional and one or more whorls of staminodes may be absent), the filaments usually free, rarely those whorls united, the third whorl usually bearing a pair of usually sessile and distinct basal glandular protuberances (occasionally connate and disc-forming), the anthers basifixed, 2-celled or 4-celled at anthesis, those of the 2 outer whorls mostly introrse, the inner third whorl extrorse, dehiscing by flaplike valves opening upwards (when 4-celled, the valves superposed, except in *Nectandra* where the cells are arranged in an arc) ; pistil 1, the ovary usually superior, 1-loculed, the ovule solitary, anatropous, pendulous, the placentation parietal, the style 1, stigma 1, occasionally 2-3-lobed ; fruit a drupe or berry usually surrounded at base by

enlarged and often persistent perianth tube seated on an enlarged receptacle or pedicel ; seed with large straight embryo. the endosperm absent (Lawrence, 1970).

Lauraceous Plants in Thailand

The occurrence of Lauraceous plants in Thailand as reported by Tem Smitinand (1980), includes various species as shown below about 18 genera and 69 species

Actinodaphne

A. angustifolia Nees.

Local name : กาหัด Kaathat (Rayong) , กาหัดหนู Kaathit nuu (Trat)
 รัมเข้ Rom khao (Ranong)

A. henryi Gamble.

Local name : ทองลาด Tong laat (Chang Mai) , ตาถีบทอง Taa thaap
 thong (Nakhon Ratchasima) , แสนตะกละใหญ่ Saentaklayai
 (Sukhothai)

A. montana Gamble.

Local name : แมดแดซิกะ Mae-dae si-ka (Malay-Pattani)

Alsodaphne

A. birmanica Kosterm.

Local name : ขมินตัน Khaminton (Phetchabun)

Alsodeia = *Rinorea*

Alsomitra = *Neoalsomitra*

Alsophila = *Cyathea*

Beilschmiedia

B. assamica Maissn.

Local name : จันทร์ดง Chan dong , ตืด Teet (Trang)

B. gammiana King ex Hook. f.

Local name : หน่วยนงุม Nuai nok ngum (Chiang Mai)

B. globularia Kurz.

local name : มะเขือขี้ ^{ขี้} Ma khuca khuen (Nakhon si Thammarat)

B. roxburghiana Nees.

Local name : ฝีมอบ ^ม Fee mop (Nonthaburi) , มะดูก ^ก Maduuk (Trat)

Cinnamomum

C. bejolghota Sweet. (*C. obtusifolium* Nees ; *C. sintoc* Bl.)

Local name : ขนุนมะแวง ^ง Khanun mawaeng, เขียวใหญ่ ^ญ Chiak yai (Trang), จวงดง ^ง Chuang dong (Nong kai), เขียด ^ด Chiat, บรีแวง ^ง Bori waeng (Ranong) . ฝั้นแสนห้า ^ห Fon saen haa , สมุลแว้ง ^ง Samum lawaeng (Nakhon si Thammarat), พะแว ^ว Phawae, โมงหอม ^ม Mong homระแวง ^ง Rawaeng (Chon Buri), มหาปราบ ^บ Mahaapraap (Trat), มหาปราบตัวผู้ ^{ผู้} Mahaapraap tuaphuu (Chonthaburi), แล้งแวง ^ง Laengwaaeng (pattani), อบเชย ^ย Op choei (Bangkok ,Uttaradit)

C. camphora Th. Fries.

Local name : พรหมเส็ง ^ง Phrom-seng. (Shan-Northern) ; อบเชยยวน ^น Opchoei yuan (General)

C. cinereum Gamble.

Local name : ลูกข่า ^{ข่า} Luuk Khaa (Chon Buri)

C. crenulicupulum Kosterm.

Local name : ฮางแกง ^ง Haang kaeng (Chiang Mai)

C. deschampsii Gamble.

Local name : เขียดตัวเมีย ^{เมีย} Chiet tua mia (Narathiwat); แตยอ ^อ Tae-yo (Malay-Narathiwat)

C. glaucescens Drury.

Local name : กะเพราตัน ^{ตัน} Kaphrao ton (Nakhon Ratchasima)

C. ilicioides Cheval (*C. siamense* Craib)

Local name : ข่าตัน ^{ตัน} Kha ton , ตะไคร้ตัน ^{ตัน} Takhrai ton (Chiang Mai) ; Cinnamom.

C. iners Bl.

Local name : กระเจงโมง ^ม Krachac mong ,กะเขียด ^ด Kachait, กะทังนัน ^น Kathang nan (Yala) ; กระดังงา ^ง Kradangngaa (Kanchanaburi) ; กระพัง

หั้น Kapang han , โกล่ Ko-le เมอมา Noc-maa (Karen-Kanchanaburi) ;
 เขียด, เขียด Khat , เขียด Chiat , ชะนุดัน Chanu ton (Peninsular) , เขียด
 Chiat . มหาปราบตัวผู้ Mahaapraap tua phuu, อบเชย Opchoei, อบเชย
 ดัน Opchoei ton (Central) ; ดิกซี่สอ Dik-see-so (Karen-Chiang Mai) ;
 บอกคอก Bok Khok (Lampang); ฝักดาบ Fak daap (pitsanulok) ; พญา
 ปราบ Phayaa praap (Nakhan Ratchasima) , สะวง Sawong (Prachin
 Buri)

C. kerrii Kosterm

Local name : ละมุดละแมง Lamunlamaeng (Loci)

C. mollissimum Bl.

Local name : เขียดใบใหญ่ Chiatbaiyai (Yala)

C. porrectum Kosterm (*C. glanduliferum* Nees. : *C. pathnoxylon* Nees.)

Local name : จวง Chuang , จวงหอม Chuang hom (Peninsular); จะไค
 ดัน Cha Khai ton , จะไคหอม Cha Khai hom (Northern) ; เทพทาร์
 Thepthaaro (Central, Chanthaburi , Suratthani) ; พลูตันขาว Phlu ton
 khao (Chiang Mai) ; มือแตกะมาจิง Mue-dac-ka-maa-ning (Malay-
 Pattani)

C. puberulum Ridl.

Local name : เขียดตัวผู้ Chiat tua phuu (Narathiwat) ; แดยอয়া
 แด Tac-yo-yaa-tac, ยอยแด Yo-yaa-tac (Malay-Narathiwat)

C. subavenium Mig. (*C. burmannii* Bl.)

Local name : ชะเอม Cha em , ชะเอมเครือ Cha-em Khruca (loci) ; สุรา
 มะริด Suraamarit (Nakhon Ratchasima) ; เส่กอเล Se-ko-le (Kalen-
 Chiang-Mai)

C. tamala Th. Fries. (*C. cassia* Bl.)

Local name : แกง Kaeng (Chiang Mai)

C. tavoyanum Meissn.

Local name : ปอยเลื่อม Poi lucam (Northern)

C. zeylanicum Linn.

Local name : การบูร Kaarabuun (Bangkok) Cinnamon tree

Cryptocarya

C. pallens Kosterm.

Local name : หมากขี้ยาย Maak khee aai (Lampang)

Dchaasia

D. candolleana Kosterm.

Local name : ทำมั่ง Thammang (Surat Thani) ; สีไทรใบใหญ่ Sirai bai yai (Yala)

D. kerrii Kosterm.

Local name : แผลช่อ Lae cho (Trang)

D. suborbicularis Kosterm.

Local name : กระตืด Kratuet (Khmer-Chanthaburi)

Endiandra

E. maingayi Hook fern.

Local name : ดันหมี่ใบเล็ก Dan mee bai lek (Trang)

Lindera

L. meissneri Hook. fern.

Local name : แส่ลูบะ Sae luu-boh (Karen-Chiang Mai)

L. oxyphylla Hook. fern.

Local name : เลือดควาย Lueat khwaai (Surat Thani)

Litsea

L. baviensis Lec.

Local name : สุรามะริด Suraa-marit (Lampang)

L. cubeba Pers.

Local name : จะไค้ตัน Chakhai ton (Chiang mai); ตะไคร้ Takhrai (Kanchanaburi); ตะไคร้ตัน Takhrai ton (Loc) (Loci)

L. elliptica Boerl.

Local name : ทำมั่ง Thammang (Surat Thani)

L. cuosma W.W. Smith.

Local name : ซะไควร์ตัน Sakhraiton (Chiang Mai) ; เมียดตัน Miat ton (Loai)

L. glutinosa C.B. Robinson. (*L. chinensis* Lamk. ; *L. sebifera* Bl.)

Local name : กำปรนบาย Kam-pron-baai (Chong-Chanthaburi) ,ดอกจุ่ม Dok chum (Lampang) ตั้งสีไพร Tang sec phrai (Phitsanulok) ; ทั้งบวน Thang buan (Pattani) ; มะเยื่อ Ma yoc, ยูปเหยา Yup yao, หมี่เหม็น Mee men (Northern Chon Buri) ; มือเบาะ Mue-boh (Malay-Yala); มั่น Mon (Trang) ; หมี่ Mee (Ubon Thani, Lampang) ; หมูทะลวง Muu thaluang (Chanthaburi) ; หมูเหม็น Muu men (Phrac); เส่ปี้ซู่ Se-pui-khuu (Karen Mae Hong Son) ; อีเหม็น Ee men (Kanchanaburi, Ratchburi)

L. grandis Hook. f.

Local name : กะทั่ง Ka thang, กะทั่งใบใหญ่ Ka thang bai yai (Peninsular) ; กะตา Ka-taa, กะยูกะตา Kaa-yuu ka-taa, มือแด Mue-dae, มือแดง Mue-daeng (Malay-Narathiwat) ; กายมือแด Kaa-yuu mue-daa, มือแด Mue-tae (Malay-Pattani) ; ทั้งทอง Thang thong (Surat Thani) ; มะดั่ง Ma Dang (Narathiwat) ; สั่งดั่ง Sangtong (Yala)

L. johorensis Gamble.

Local name : แปง Pac ngu (Pattani)

L. lancifolia Hook. f.

Local name : หมอรัต Mo rat (Surat Thani)

L. leiantha Hook. f.

Local name : ทำมิ่ง Thammang (Surat Thani)

L. megacarpa Gamble.

Local name : ทั้งช่อ Thang cho (Surat Thani)

L. monopetala Pers. (*L. polyantha* Juss.)

Local name : กะทั่ง Ka thang (Peninsular); พอครา Pho khraa (Nakhon Si Thammarat) ; โพน่วย Phonuai, มูหมู Mu-muu (Karen-Kanchanaburi) ; เมาะโม Moh-mo (Karen-Mae Hong son) ; ยูเกอา YuK yao (Phrac) ; สะหมี่ Sa mee (Chaiyaphum) ; หมี่ Mee

(Chanthaburi) ; หมี่ต๋ม Mee tum , หมี่โป่ง Mee pong (Chiang Mai) ; อีเหมิน Ee men (Northern)

L. myristicaefolia Hook. f.

Local name : จามจู้รี Chamchuree (Trat); ตริด Trit (Trang) , ตะไคร้ Ta Khrai (Chanthaburi)

L. parakensis Gamble.

Local name : ตาริด Taareet (Trang)

L. petiolata Hook. f.

Local name : ทำมิ่ง Thammang (Penisular)

L. pierreii Lec.

Local name : ตานหก Taan hok (Prachin Buri)

L. resinosa Bl.

Local name : ทำมิ่งพอกรง Thammang phokrong (Nakhon Si Thammarat)

L. semecarpifolia Hook. f.

Local name : ช่อข้าวสุก Cho khaao suk (Chiang Mai)

L. umbellata Merr. (*L. amara* Bl.)

Local name : ฟันปลา Fan plaa , สลัด Salot (Chanthaburi) ; เมนตริอ Men-truc (Khmer-Chanthaburi); สะเตอ Sa tuca (Trat)

Neocinnamomum

N. caudatum Kosterm. (*C. caudatum* Nees.)

Local name : จวงหอม Chuanghom (Chiang Mai)

Neolitsca

N. casiaefolia Merr.

Local name : พิกุลป่า Phikun paa (Chon Buri); เอียน Hian (Songkhla)

N. cuipala Kostel.

Local name : กีบตอง Keep tong (Lampang)

N. siamensis Kostel.

Local name : ตาทิบทอง Taa thip thong, ตาทิบหิน (Taa thip hin) (Nakhon Ratchasima)

N. zeylanica Merr.

Local name : เอียน Ian (Peninsular)

Nothaphoebe

N. umbelliflora Bl.

Local name : ทั้งใบช่อ Thang bai cho (Satun)

Persea

P. americana Mill.

Local name : อะโวคาโด Awokhaado (Bangkok); Avocado, Alligator Pear.

P. gamblei Kosterm.

Local name : อินทวา Inthawaa (Loei)

P. kurzii Kosterm.

Local name : ยางบง ยางโบบง Yaang bong (Nakhon Phanom, Nakhon Ratchasima)

P. membranacea Kosterm.

Local name : เอียน Ian (Songkhla)

P. pauhoi Kanehira

Local name : ลำเต้า Laa-tao (Chinese-Bangkok) ; Bandoline wood.

Phoebe

P. attenuata Nees.

Local name : ทั้งสีไพร Thang sirai (Yala) ; แผลขี้ควาย Lac kee khwaai, แผลขี้ควาย Lac kee khwaai, แผลคางคก Lac Khaang khok, แผลทบ Lac Thop (Trang)

P. declinata Nees.

Local name : จันทร์ทิต Chan thit. แผลบุก Lac buk (Suratthani) ; พังตาดเขา Phangtaan Khao, แผลช่อ Laccho, แผลทอบ Lac thop (Trang) ; รั้งกะแท Rang ka thae (Chanthaburi)

P. excelsa Nees.

Local name : พังตาดเขา Phang Taan khao (Trang)

P. grandis Merr.

Local name : ทั้บอบ Thang bon (Pattani) ; มุ้บเคา Mun Khao
(Nakhon Si Thammarat)

P. lanceolata Nees.

Local name : ไก่หัด Kai hat, ตกลีบ Tok suep, ตองหอม Tong hom, ปี่
ตอง Pee tong (Chieng Mai) ; ตังนี Tang Nee (Lampang, Phrae) ; ทั้อป
Thop, สีไทรคางคก Sirai Khaang khok (Pattani) ; สีแกชาเต่า Si-kaa-
saa-toh (Malay-Narathiwat), แห้ลบก Lae buk (Peninsular)

P. opaca Bl.

Local name : มุ้บเคา Mun khao (Peninsular)

P. peniculata Nees.

Local name : กอหีน Ko hin (Loei) ; กะทิต Ka thit (Trat) ; กะทิต ไบ
พลวง Ka thit bai phluang (Chanthaburi) ; คางคก Khaang khok
(Lampang, Phrae) ; จันทีพ Chan thip (Na khon Si Thammarat) ;
เซโครโบ Se-kro-bo (Karen-Chiang Mai) ; ตองแ่บ่ง Tong Khaeng,
มะดูกดง Ma duuk dong (Chiang Mai) ; ตะนมบั้งกรวย Ta-nom bang-
kruai (khmer-Chanthaburi) ; ทับ Thop (Chum-phon, Nakhon-Si-
Thammarat) ; ทั้น Than (Surat Thani) ; สะทีบ Sa thip (Uttaradit)

P. tavoyana Hook. f.

Local name : กอหีน Ko hin (Loei) , ทั้น Than (General)

Temmodaphne

T. thailandica Kosterm.

Local name : สมุดแ่ว้ง Samun lawaeng (Trat)

Description and uses of plants selected for this study

Cinnamomum camphora Th. Fries.

A large handsome evergreen tree, native of China, Japan, and Formosa, and introduced into, and cultivated in many other countries including India, either as an ornamental plant or as a source of camphor. In its natural habitat it attains a height

aromatic. The fruits are dark green, ovoid, rather dry, globose and about 0.3 inch in diameter. (Council of Scientific and Industrial Research , 1950).

Every part of *C. camphora* is credited with sedative, anodyne, antispasmodic, diaphoretic, and anthelmintic properties. Internally the plant is used in colds, chills, and in diarrhoea from cold ; externally it is applied to cases of inflammations, bruises and sprain. The essential oil from the tree and pure camphor are quite ineffective as anthelmintics (Blatter, Caius and Mhaskar, 1935).

Cinnamomum iners Bl.

Tree, about 12 m. tall, with a short thick stem and large bushy top ; branchlets glabrous. Leaves coriaceous, when young white, then red, finally deep green, elliptic or elliptic-oblong, variable, 12.5-18 cm. long, 3.8-7.5 cm. wide ; nerves 3, nervules and reticulations almost or quite invisible ; glabrous beneath ; petioles 5 mm. long. Panicles about 15 cm. long, lax. Flowers and pedicels silky, yellow within, 2.5 mm. long, foetid tube very short ; sepals ovate, subacute. Fruits ellipsoid, black, pulpy, blunt, 1-1.5 cm. long, cupule very short (Backer and Van Den Brink, 1963)

The seed, bruised and mixed with honey or sugar, are given to children in dysentery and coughs, and combined with other ingredients in fevers. The oil from the inner bark is effective as an anthelmintic (Blatter, Caius and Mhaskar, 1935).

Cinnamomum porrectum Kosterm

Lofty tree 9-30 m. tall with whitish rough bark. Leaves red when young, adult subcoriaceous dark green, glaucous beneath, elliptic-ovate, acute or acuminate, base acute or round ; nerves pinnate, slender, 3 pairs from the midrib ; 5-10 cm. long, 2.5-4.5 cm. wide ; petioles slender, 2.5-3.2 cm. long. Panicles numerous, slender, glabrous ; peduncle 2.5-5 cm. long ; branches 1.3 cm. long, cymose at the top. Flowers few on each, 2.5 mm. across, light yellow. Perianth-tube funnel-shaped,

glabrous, lobes oblong, villous inside. Drupe globose. 7 mm. across ; perianth-tube enlarged. 4.5 mm. across, tube funnel-shaped. 5 mm. long (Blatter, Caius and Mhaskar, 1935).

The fruit yields an oil used in rheumatic affections. An infusion of the root is also employed as a substitute for *Sassafras* (Burkill, 1935).

Litsea cubeba Pers.

A deciduous aromatic shrub or small tree found in eastern Himalayas, Assam and Manipur up to an altitude of 2,700 m. Bark greenish, warty ; leaves lanceolate or ovate-lanceolate, somewhat inequilateral, membranous ; flowers in umbels or corymbs ; fruits globose. Most parts of the plant are aromatic and yield volatile oils. The fruit is edible. It is aromatic and carminative and is reported to be used in Indo-China for headache, dizziness, hysteria, paralysis and loss of memory. It is also used as a preservative for fish. In Indonesia, the fruits are used as a substitute for cubeb pepper (*Piper cubeba* Linn.) (Council of Scientific and Industrial Research, 1962).

Litsea glutinosa C. B. Robinson.

An evergreen shrub or tree, up to 25 m. in height and 1.5 m. in girth , with a clean bole 6.0 m. long, found throughout India, ascending up to an altitude of 1,350 m. in the outer Himalayas. Bark brownish grey, somewhat corky, viscid inside ; leaves very variable in size and shape, elliptic-ovate or oblong-lanceolate, pubescent, aromatic ; flowers in umbellate heads, yellowish ; fruit globose , black or purple (Council of Scientific and Industrial Research, 1962).

The bark of *L. glutinosa* constitutes the common demulcent drug sold in Indian bazaars under the name Maida Lakri or Maida Lakadi. It is available in the form of broken quills or pieces, a few inches in length. It is mucilaginous, feebly balsamic and mildly astringent. It is used in diarrhoea and dysentery. Ground and

pasted material is used as an emollient application for sprains, bruises and rheumatic and gout joints ; it is also used as a styptic dressing for wounds. The leaves are mucilaginous and considered emollient and antispasmodic. They are used in infusion or as poultice for bruises and wounds ; flower buds are credited with similar properties. In parts of India, the leaves are used as cattle fodder. The fruit is edible. It is a rich source of lauric acid and may be utilized for the preparation of lauryl compounds used as detergents. The root is sweetish bitter, astringent and tonic. In Philippines, a decoction of the root is used as emmenagogue (Blatter, Caius and Mhaskar. 1935).

Litsea petiolata Hook.f.

Branches and leaves glabrous, leaves 4-5 in., alternate, long-petioled, penninerved, coriaceous, pale brown when dry, elliptic or oblong, obtuse or subacute, smooth above, beneath minutely reticulate with 5-6 pairs of slender nerves, umbels below the leaves clustered very shortly pedicelled 5-fold., bracts 5, outer glabrous, sepals 6 with long lax hairs, stamens 9-10, filaments long, slender, villous (Hooker, 1885).

It's stem bark is used for mixing in "Nam Prik" (Thai-chilli sauce) in order to release the smell that similar to the giant water bug's smell as well as stem wood is used as pestel for preparing Nam Prik. Young leaf is used for eating with "Nam Prik Kaeng Num Kai" (Thai-southern chilli sauce) and "Khanom Cheen" (Thai Rice Noodle) Its pharmacological properties is carminative activity, antifatulence, stomach discomfortability. (ฉันทม จอนจวบทรง, 2537)

There are several essential oil containing plants of the family Lauraceae in the rain forests of Thailand which have never been investigated, including plant species in the two genera of *Litsea* and *Cinnamomum*.

The main objectives of this investigation are as follows :

1. to screen for new essential oils from Thai Lauraceous plants.
2. to study the antimicrobial activity of these essential oils.

Additionally, this work also includes a western Lauraceous plant cultivated in Chiang Mai by the Royal Project Foundation, namely, *Laurus nobilis* L. The aim is to analyze its chemical composition and percentage of the oil and compare these with the imported material available in the market.