



Chapter I

Introduction

The Lauraceae is a predominantly arboraceous family. Its species are most abundantly represented in the tropics of both hemispheres, with about 18 American and nearly as many Asian genera. Few of these are common to both regions. On the whole, the family is sparsely distributed in tropical Africa, with the exception of Madagascar, which has one genus with about 18 species. There are several genera in Australasia (Ralph, Bick and Sinchai, 1978). Lauraceae composes of about 32 genera and 2,000-2,500 species (Willis, 1973). Mankind had used the Lauraceous plants for timbers, edible fruits, seed fats, drugs and perfume oils (Gottlieb, 1972). Description of Lauraceae are as below :

Trees or shrubs, often aromatic or (*Cassytha*) leafless twining parasites. Leaves alternate, rarely opposite or sub-opposite. Flowers regular, small uni- or bi-sexual in axillary clusters, racemes or panicles. Perianth inferior, tube short, lobes usually 6, imbricate. Stamen 6, 9 or 12 in 2- to 4- series; filaments flat, those of inner row and sometimes of outer row with glands at base, anthers terminal, 2- to 4 celled, cells dehiscing by upturned lids, fourth row of stamens often reduced to staminodes. In female flowers stamens reduced to linear or clubbed staminodes. Ovary 1-celled, 1-ovuled. Fruit a drupe supported on the more or less enlarged perianth-tube and lobes; pedicels also thickened (Ridley, 1967).

From Kosterman's system of classification of Lauraceae genera, *Neolitsea* is a small genus of trees or shrubs belonging to the subtribe Litseinae, tribe Litseeae, subfamily Lauroideae,

of the family Lauraceae (Gottlieb, 1972). In subtribe Litseineae, morphological differences among genera *Litsea* and *Neolitsea* are slight. They can be differentiated by number of fertile stamens; *Neolitsea* 6, *Litsea* 9, 12 or rarely more (Backer and Bakhuizen Van Den Brink Jr., 1965). Most of the *Neolitsea* species are widely distributed in Indo-Malaysian region through Australia.

About seven species were recorded in India (Zaheer, 1966).

Backer and Bakhuizen Van Den Brink Jr. (1965) described the genus *Neolitsea* as follows :-

Flowers (i.e. flower aggregates) in axils of leaves or fallen leaves in heads or umbels; single flowers arranged in few-flowered (in Java 5) heads or pseudo-umbels before anthesis surrounded by globose (in Java) 4-leaved involucre; unisexual; pedicels short, pilose; perianth-tube short, (in Java) inside pilose; tepals 4, equal; fertile stamens 6; 2-3 inner ones at or just above base bearing (1-2 sessile) glands; anthers 4-celled, introrse; ovary superior, whether or not enveloped by perianth-tube; style distinct; stigma peltate; berry sessile, on whether or not enlarged receptacle. Leaves spirally arranged, mostly 3-nerved or 3-plinerved; pellucid-dotted beneath or not; leaf-buds scaly. Trees or tall shrubs.

According to the Index Kewensis fifty four species of this genus are shown below :-

- Neolitsea alongensis* Lecomte
- N. *amabilis* Airy-Shaw
- N. *amboinensis* Merrill
- N. *apoensis* Elmer
- N. *archboldiana* C.K. Allen
- N. *arfakensis* Kanehira & Hatusima
- N. *aureo-sericea* Kostermans
- N. *boninensis* Koidz.

- Neolitsea brassii* C.K. Allen
- N. *buisanensis* Yamamoto & Kamikoti
- N. *cambodiana* Lecomte
- N. *chekiangensis* Nakai
- N. *chuii* Merrill
- N. *cuneifolia* Koidz.
- N. *daibuensis* Kamikoti
- N. *elaeocarpa* H. Liou
- N. *ellipsoidea* C.K. Allen
- N. *ferruginea* Merrill
- N. *fischeri* Gamble
- N. *formosa* S. Moore
- N. *gilva* Koidz.
- N. *hiiranensis* Liu & Liao
- N. *homilantha* C.K. Allen
- N. *howii* C.K. Allen
- N. *impressa* Yang
- N. *incana* Elmer
- N. *intermedia* Elmer
- N. *kwangsiensis* H. Liou
- N. *lanceolata* Merrill
- N. *lanuginosa* var. *chinensis* Gamble
- N. *latifolia* Koidz.
- N. *levinei* Merrill
- N. *megacarpa* Merrill
- N. *merilliana* C.K. Allen
- N. *microphylla* Merrill

Neolitsea oblongifolia Merrill & Chun

- N. *obtusifolia* Merrill
 N. *ohbana* Koidz.
 N. *paraciculata* Nakai
 N. *paucinervia* Merrill
 N. *phanerophlebia* Merrill
 N. *poilanei* H. Liou
 N. *polycarpa* H. Liou
 N. *purpurescens* Yang
 N. *reticulata* Kostermans
 N. *siamensis* Kostermans
 N. *stenophylla* Koidz.
 N. *subcaudata* Merrill
 N. *subfoveolata* Merrill
 N. *sutchuanensis* Yang
 N. *teschneriana* C.K. Allen
 N. *velutina* W.T. Wang
 N. *vidalii* Merrill
 N. *zeylanica* Merrill

In Thailand, according to the Thai Plant Names of the Royal Forest Department, only four species of *Neolitsea* are mentioned (Smitinand, 1980).

Neolitsea cassiaefolia Merr., พิกุลป่า Phikun paa (Chon Buri), เขียน Hian (Songkhla)

N. cuipala Kostel., กีบตอง Keep tong (Lampang).

Neolitsea siamensis Kostel., ตาทิบทอง Taa thip thong,
ตาทิบหิน Taa thip hin (Nakorn Ratchasima).

N. zeylanica Merr., เอียน Ian (Peninsular).

Kostermans (1975), had reported new species of *Neolitsea* in Thailand as follows :

Neolitsea aureo-sericea Kosterm.

N. reticulata Kosterm.

N. siamensis Kosterm.

N. foliosa (Nees) Kosterm. (*Litsea foliosa* Nees)

Many plants of the Lauraceae were reported to be used as folklore medicine in many countries mostly in Asia and some were described as *Neolitsea* species. In Kelantan and Pahang of Malaysia, the root of *Neolitsea zeylanica* Merr. and *N. cassia* (Linn.) Kostermans are used as poultice for eruption of finger (Burkill, 1939; Chopra, 1969; according to Index Kewensis the valid names should be *Litsea zeylanica* Nees and *Laurus cassia* Linn., respectively). In Indonesia, leaves of *N. cassiaefolia* (Bl.) Merr. (valid name is *Litsea cassiaefolia* Bl.) are mentioned as a remedy for scabies (Perry, 1980). The root and bark of *Neolitsea* spp. in India are applied to bruise and eruptions and the fruits of *N. umbrosa* (Nees) Gamble (valid name is *Litsea umbrosa* Nees) yield oil using for burning and also applied for skin diseases (Zaheer, 1966). The other uses of the plants in this genus are for house-building, planks, rafters (Burkill, 1935) and the leaves are used as fodder in hilly areas of Punjab, but

the fodder is of medium or poor quality (Zaheur, 1966). In Thailand, there are only the reports about the medicinal uses of the genus *Litsea* but not for the *Neolitsea*.

Lauraceae is one of the families recognized for a long time as a source of alkaloids. According to Hegnauer (1966), benzylisoquinolines and aporphines are probably present in most of their members. *Neolitsea* species are also found to be rich in isoquinoline alkaloids. The details of alkaloids content are shown in Table 2. Other chemical constituents, flavonoids, monoterpenes, sesquiterpenes, triterpenes, lignans, fatty acids and phytosterols are also occurred in this family. There are many pharmacological studies on isoquinoline alkaloids such as the pharmacological test on boldine which isolated from *Litsea turfosa* Blume have indicated that it has an LD₅₀ in mice of about 150 mg/kg (intraperitoneally, propylene glycol) and causes clonic convulsions at this concentration; it has shown inactive against Sarcoma 180 and L 1210 tumors at sublethal dose (Holloway and Scheinmann, 1973). Boldine is only slightly toxic and does not cause addiction. It has a mild sedative diuretic and antiparasitic actions and also increase the secretion of the liver and salivary gland (Shamma, 1972 a). Also, other chemical constituents isolated from this genus were studied the pharmacological action for example; Neoliacine, the germacranolide sesquiterpene dilactone from *Neolitsea aciculata* Koidz. (valid name is *Laurus aciculata* Teschn.) exhibit moderate cytotoxicity to HeLa cell culture in vitro (Nozaki, Hiroi, Takaoka and Nakayama, 1983).

The plant used in this investigation was identified as *Neolitsea aureo-sericea* Kosterm., family Lauraceae. The medicinal use and chemical investigation of this plant have not been reported previously. The preliminary chemical investigation of this plant showed the presence of alkaloids and confirmed by thin-layer chromatography.

Neolitsea aureo-sericea Kosterm. is a recently described species and indigenous to Thailand belonging to the family Lauraceae. It occurs as a large rain-forest tree of Northeastern region in Thailand. It has slender branchlets with very minute dense golden yellow-sericeous trichomes. Leaves are coriaceous oblong up to narrowly oval with very short broadly acuminate, base cuneate. On the upper side (young leaves covered with minute sericeous trichomes soon glabrous smooth or indistinct, very minutely pitted slightly raised filiform veins at the midrib. The lower side glaucous, indistinct very minutely pitted sericeous nearly glabrous veins at the midrib of slightly raise nerve. Subbasal filiform veins 2/3 lengthwise on both sides indistinct, petiole long, slender, umbel axillary or sessile at the internode, bract very minutely sericeous, pedicels sericeous, filaments slender glabrous (Kostermans, 1975).

Since there were neither reports on chemical constituents nor pharmacological actions of this plant and in order to increase the information for chemotaxonomy, it stimulated the author to appraise phytochemical works on this indigenous plant.

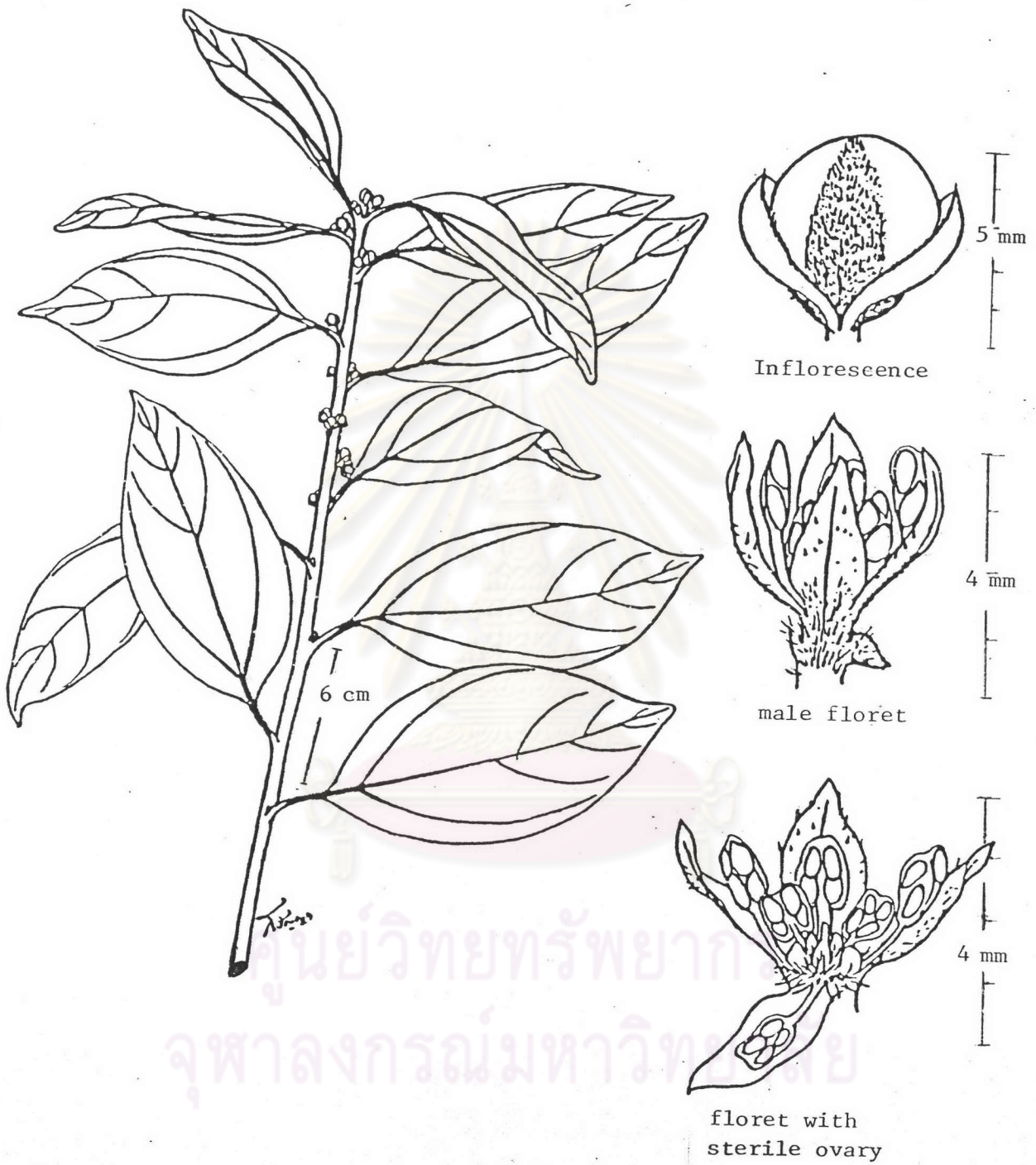


Figure 1 *Neolitsea aureo-sericea* Kosterm. (Lauraceae)