



CHAPTER I

INTRODUCTION

Michelia longifolia Blume

The species of *Michelia longifolia* Blume (*M. alba* DC.) is a member of the family Magnoliaceae. This genus consists of over forty-five species distributed in tropical and subtropical Asia from India to China, Japan and Malaysia; four species are native to Thailand, and additional two other species are commonly cultivated (1).

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

Michelia acris Ruiz & Pav. apud Lopez.

M. aenae Dandy

M. alba DC. (*M. longifolia* Blume)

M. baillonii Finet & Gagnep.

M. balansae Dandy

M. baviensis Finet & Gagnep.

M. bodinieri Finet & Gagnep.

M. braianensis Gagnep.

M. caerulea DC.

M. culcuttensis Parmentier

M. cathcartii Hook f. & Thoms.

M. cavaleriei Finet & Gagnep.

(*M. cavaleriei* Le veillé, *M. leveilleana* Dandy)

M. champaca Linn. (*M. aurantiaca* Wall.,

M. blumei Steud., *M. evonymoides* Burm.,

- Michelia pubinervia* Blume, *M. rheedii* Wight,
M. rufinervis DC., *M. sericea* Pers.,
M. suaveolens Pers., *M. champava* Lour. ex Gomes)
Michelia chapensis Dandy
M. chingii Cheng
M. coerulea Steud.
M. compressa Sarg.
M. compressa var. *formosana* (*M. formosana* (Kanchira)
Masamune & Suzuki)
M. compressa (Max.) Sarg. var. *macrantha* Hatusima
M. constricta Dandy
M. cumingii Merrill & Rolfe
M. dandyi Hu
M. doltsopa Buch-Ham ex DC.
M. ecicatrissata Miq.
M. excelsa Blume
M. fallax Dandy
M. figo Spreng.
M. floribunda Finet & Gagnep
(*M. kerii* Craib, *M. manipurensis* Craib)
M. forbesii Baker
M. foveolata Merrill ex Dandy
M. fulgens Dandy
M. fuscata Blume
M. glaba Parmentier
M. gracilis Kostel.
M. gravis Dandy ex Gagnep.
M. griffithii Finet & Gagnep.

- Michelia gustavi* King. (*Magnolia gustavi*)
- M. hypolampra* Dandy
- M. kachirachirai* Kanchira & Yamamoto
- M. kingii* Dandy
- M. kisopa* Buch.-Ham. ex DC.
- M. lacei* Smith
- M. lanuginosa* Wall. (*M. velutina* DC.)
- M. macclurei* Dandy
- M. macrophylla* Don (*Magnolia pterocarpa*)
- M. magnifica* Hu
- M. manipurensis* Watt ex Blandis
- M. manni* King
- M. martinii* Dandy (*M. martinii* Le veille)
- M. masticata* Dandy
- M. maudiae* Dunn.
- M. mediocris* Dandy
- M. microtricha* Hand.-Mazz.
- M. mollis* (Dandy) Mclaughl.
- M. montana* Blume.
- M. nilagirica* Zenker (*M. glauca* Wight,
M. ovalifolia Wight, *M. pulneyensis* Wight,
M. walkeri Wight)
- M. oblonga* Wall. (*M. lactea* Buch-Ham. ex Wall)
- M. parviflora* Merille (*M. parviflora* Rumph. ex DC.)
- M. parvifolia* Blume (*M. parvifolia* DC)
- M. pealiana* Finet & Gagnep. (*M. pealiana* King)
- M. phellocarpa* Finet & Gagnep.
- M. philippinensis* Dandy (*Magnolia philippinensis*)

- Michelia pilifera* Bakh. (*M. velutina* Blume)
- M. platyphylla* Merrill
- M. platypetala* Hand.-Mazz.
- M. punauana* Hook & Thoms.
- M. rajaniana* Craib
- M. scortechinii* Dandy (*Magnolia scortechinii*)
- M. shiluensis* Chun & Y.F. Wu
- M. sinensis* Hemsl. & Wils.
- M. skinneriana* Dunn.
- M. subulifera* Dandy
- M. sumatrae* Dandy
- M. szechuanica* Dandy
- M. tignifera* Dandy
- M. tila* Buch-Ham.
- M. tonkinensis* A. Cheval.
- M. tsiampaca* Linn. (*M. velutina* Blume)
- M. tsoi* Dandy
- M. uniflora* Dandy
- M. wardii* Dandy
- M. wilsonii* Finet & Gagnep.
- M. yulan* Kostel (*Magnolia conspicua*)
- M. yunnanensis* Franch ex Finet & Gagnep.

Michelia species growing in Thailand are as follows :-

- Michelia alba* DC. Champee จัป (General); White Chempaca
(*M. longifolia* Bl.) (1), (2).
- M. champaca* Linn. Champaa จัป (General); Cham-paa-ko จัป (Malay-Peninsular);

Champaa khao จำปาเขา (Trang);
 Champaa thong จำปาทอง (Nakorn Si Thammarat);
 Champaa paa จำปาป่า (Surat Thani);
 Sonchampa; Champak; Orange chempaka.
 (1), (2).

Michelia figo Spreng Champee khaek จำปีแขก (Bangkok);
 Champa khaek จำปาแขก (Chanthaburi);
 Champac; Dwarf Chempaka. (1), (2).

M. floribunda Finet & Gagnep Kao mahawan แก้วมหารวัน (Northern);
 (*M. kerrii* Craib, Champee noi จำปีน้อย (North-eastern),
M. manipurensis Craib) Champee paa จำปีป่า (Chiang Mai);
 Inthawaa อินทวา (Loei) (1), (2).

M. rajaniana Craib Champee luang จำปีหลวง (Chiang Mai),
 Cha-kae ชะแก (Karen-Mae Hong Son).
 (1), (2).

Michelia sp. Champee dong จำปีดง
 (North-eastern) (1).

Utilization of this genus has been reported in many countries. The bark of *M. champaca* is bitter with a sharp acrid taste; causes warmth in the abdomen; destroys poisons; removes worms; facilitates micturition; has the properties of diuretic, diaphoretic, aphrodisiac, stimulant, expectorant, astringent and febrifuge (4,5) ; a decoction is administered as a post partum protective medicine. The leaves in combination with other drugs remove the foetid odour of vaginal discharges and the juice of the leaves is given with honey in case of colic (4, 5). The flowers are expectorant and useful in cough and

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rheumatism; the smell of the flowers is a good stimulant; the perfumed oil prepared from the flowers is a useful application in cephalalgia, ophthalmia and gout (4). The flowers and fruits are considered bitter and cool remedies, and are used in dyspepsia, nausea and fever. The flowers mixed with sesamum oil form an external application, which is often prescribed in vertigo and also applied to foetid discharges from the nostrils. They are useful as a diuretic in renal diseases and in gonorrhoea, stimulant, antispasmodic, tonic, stomachic and carminative (4). The dried root and root-bark, mixed with curdled milk, is useful as an application to abscesses, clearing away or maturing the inflammation; its infusion is used as emmenagogue and purgative. The seeds and fruits are useful for healing cracks in the feet (4).

The bitter bark of *M. baillonii* (Pierre) Finet & Gagnep is considered to be both stimulant and febrifuge (5).

The bark of *M. nilagirica* Zenk. is used as a febrifuge and that of *M. montana* Bl. is a bitter tonic useful in fever (4).

Furthermore, *Michelia* species have been used by indigenous people in the treatment of cancer. For example, *M. champaca* has been used in India for the treatment of abdominal tumors and *M. hypoleuca* and *M. officinalis* for carcinomatous sores and leukemia respectively, in China (7).

Michelia longifolia Bl. is known in Thai as Champee (จําปี) and in English as White Champaka (1,2). It is a small to medium size tree. Leaves oblong-lanceolate to ovate, 15-25(-36) by 4-9(-11) cm. Flower-buds narrowly fusiform, strongly scented. Tepals 8-12. Carpels 10-13 in a gynoeceium, glabrous. No fruiting specimens ever seen. It is

cultivated in Thailand. The origin may probably be Malaysia or South China. (1)

Michelia longifolia Bl. has been used in traditional medicine in Malay Peninsula, the flower buds are put into an infusion given to women for sapremia following a miscarriage. They are also employed in the manufacture of perfume (5). In Thailand, there is no report about the medicinal uses of this species.

Concerning to biological activity, the aqueous extract of *Michelia longifolia* Bl. exhibited antimicrobial activity (3).

The previous phytochemical studies of *Michelia longifolia* Bl, which have been reported, were concerned with the alkaloids contained in this species (9) and the aromatic components of the flowers (10,11). The alkaloids isolated were ushinsunine, oxoushinsunine, salicifoline and michelalbine (9). The flower's essential oil is composed of many compounds, including ethanol, methyl propionate, methyl isobutyrate, methyl butyrate, methyl *alpha*-methyl butyrate, ethyl 3-methyl butyrate (10), *iso*-aristolene, *beta*-bisabolene, butyric acid, 2-methyl-methyl ester, *delta*-cadinene, camphene, car-3-ene, *trans*-carveol, *cis*-caryophyllene, 1-8 cineol, *alpha*-cubebene, *beta*-cubebene, *ortho*-cymene, eugenol methyl ether, *iso*-eugenol methyl ether, limonene, linalool, *cis*-linalool oxide, *trans*-linalool oxide, *beta*-myrcene, ocimene, *alpha*-phellandrene, *beta*-pinene, *beta*-selinene and *alpha*-ylangene (11).

The preliminary study on biological activity of *Michelia longifolia* Bl. stem bark found that its crude ethanolic extract exhibited strong cytotoxicity to KB-cell culture assay.

This biological activity is of great interest, which prompted the author to carry out on the extraction, isolation and identification of the organic compounds containing in the stem bark of *Michelia longifolia* Bl. in order to search for the compounds which might exhibit therapeutic activities.



Figure 1.1 *Michelia longifolia* Blume. a, Flowering branch: b, flower:
c, details of flower with petals removed (8).