



# CHAPTER I

## INTRODUCTION

The plants in the genus *Diospyros* of the family Ebenaceae are usually trees or shrubs, dioecious or sometimes monoecious or polygamous. All parts of these plants often turn blackish when dry. The leaves are distichous and mostly reflexed, penninerved. The inflorescences are cymose or fasciculate, axillary or ramiflorous, but rarely cauliflorous, or the flowers are solitary. These flowers are actinomorphic. The calyx is more or less deeply lobed, persistent and usually accrescent in fruit; the lobes are valvate or imbricate in bud. The corolla is gamopetalous, caducous; their segments are patent and contorted in bud. The stamens are at least 6, free or in pairs, inserted on the base of the corolla-tube, or in bundles on the receptacle. The anthers are basifixed, 2-locular, longitudinally dehiscent. Rudimentary ovary usually presents in male flowers, whereas staminodes usually present in female flowers. The ovary is superior, (3-) 4 (-16)-locular with 1(-2) pendulous ovules in each locule. The styles are 1-5. The fruit is indehiscent, fleshy, dry or woody, one to many-seeded with ruminant or smooth endosperm (Phengklai, 1978).

According to Phengklai (1978), the species of *Diospyros* found in Thailand are as follows :

1. *Diospyros apiculata* Hiern
2. *D. areolata* King & Gamble
3. *D. bambuseti* Fletcher
4. *D. bejaudii* Lec.
5. *D. borneensis* Hiern
6. *D. brandisiana* Kurz
7. *D. buxifolia* (Bl.) Hiern
8. *D. castanea* (Craib) Fletcher
9. *D. cauliflora* Bl.
10. *D. coaetanea* Fletcher
11. *D. collinsiae* Craib
12. *D. confertiflora* (Hien) Bakh.
13. *D. crumenata* Thw.

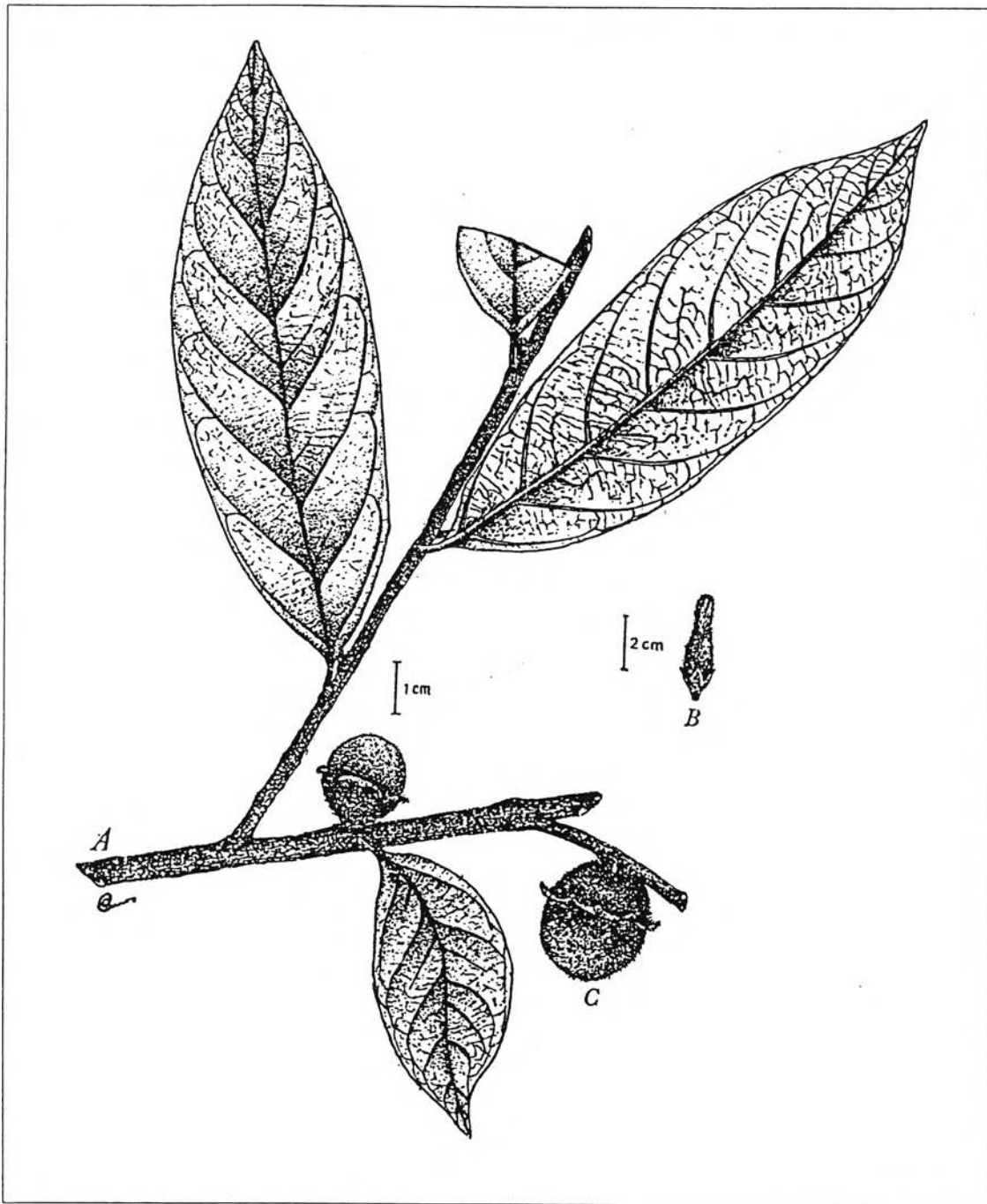
14. *Diospyros curranii* Merr.
15. *D. curraniopsis* Bakh.
16. *D. dasyphylla* Kurz
17. *D. decandra* Lour.
18. *D. dictyoneura* Hiern
19. *D. diepenhorstii* Miq.
20. *D. dumetorum* W. W. Smith
21. *D. ehretioides* Wall. ex G. Don
22. *D. ferrea* (Willd.) Bakh.
23. *D. ferrea* var. *ferrea* Bakh.
24. *D. ferrea* var. *littorea* Bakh.
25. *D. filipendula* Pierre ex Lecomte
26. *D. frutescens* Bl.
27. *D. fulvopilosa* Fletcher
28. *D. glandulosa* Lace
29. *D. gracilis* Fletcher
30. *D. hasseltii* Zoll.
31. *D. hermaphroditica* (Zoll.) Bakh.
32. *D. hermaphroditica* var. *olivacea* Bakh.
33. *D. insidiosa* Bakh.
34. *D. kerii* Craib
35. *D. kurzii* Hiern
36. *D. lanceifolia* Roxb.
37. *D. latisepala* Ridl.
38. *D. longipilosa* Phengklai
39. *D. malabarica* (Desv.) Kostel.
40. *D. malabarica* (Desv.) Kostel. var. *malabarica* Kostel.
41. *D. malabarica* (Desv.) Kostel. var. *siamensis* (Hochr.) Phengklai
42. *D. malayana* Bakh.
43. *D. martabanica* Clarke
44. *D. mollis* Griff.
45. *D. montana* Roxb.
46. *D. oblonga* Wall. ex G. Don
47. *D. pendula* Hasselt ex Hassk.
48. *D. pilosanthera* Blanco
49. *D. pilosula* (A. DC.) Hiern

50. *Diospyros pubicalix* Bakh.
51. *D. pyrrhocarpa* Miq.
52. *D. rhodocalyx* Kurz
53. *D. rubra* Lec.
54. *D. saxosa* Fletcher
55. *D. scalariformis* Fletcher
56. *D. scortechinii* King & Gamble
57. *D. sumatrana* Miq.
58. *D. tahanensis* Bakh.
59. *D. thaiensis* Phengklai
60. *D. toposia* Ham.
61. *D. toposia* Ham. var. *topsia* Ham.
62. *D. toposia* Ham. var. *topsioides* (King & Gamble) Phengklai
63. *D. transitoria* Bakh.
64. *D. trianthos* Phengklai
65. *D. undulata* Wall.
66. *D. undulata* Wall. ex G. Don var. *cratericalyx* (Craib) Bakh.
67. *D. undulata* Wall. ex G. Don var. *undulata* Wall.
68. *D. variegata* Kurz
69. *D. viridis* Craib
70. *D. wallichii* King & Gamble ex King
71. *D. winitii* Flecher

*Diospyros undulata* Wall. ex G. Don var. *cratericalyx* (Craib) Bakh. is a medium size tree that can grow up to 20 m. Its leaves are oblong to lanceolate, 12-18 by 3-7.5 cm, with acute, obtuse or rounded base without glands. The apex is acute or acuminate. The leaf texture is subcoriaceous to coriaceous and the surface is glabrous on both surfaces. The leaf has 10-15 pairs of secondary nerves, arched and anastomosing well away from the margin, more or less impressed on the upper surface but inconspicuous on the lower surface. The tertiary veins are inconspicuous. The petiole is about 1 cm long, glabrous. The male flowers are cymose, 4(-5)-merous, with pedicel length of 5-7 mm, pubescent. The calyx is campanulate-shaped, 3-5 mm long, divided to middle, sericeous both on the outside and inside. The corolla is tubular-shaped, 8-13 mm long, divided to middle, sericeous on the outside and glabrous inside. The stamens are 12-18, sericeous. The ovary is rudimentary and pilose.

The female flowers are solitary, 4(-5)-merous, sessile or pedicellate. Its calyx is campanulate-shaped, divided to one-third and woolly on both sides. The corolla is the same as in male flowers but larger. The ovary is ovate-shaped, hirsute, 8-locular with single, glabrous style. The staminodes are 4-8, glabrous. The flowers and fruits are sessile or subsessile. The fruit size is 1.5 by 1.5-2 cm, tomentose, glabrescent. They become dry at maturity. The base of the fruit is rounded, whereas its apex is rounded or truncate. The fruiting calyx is cup-shaped, divided to about one-third, woolly, glabrescent outside and woolly inside. The lobes are reflexed, not plicate, without nerves. The endosperm in the seed is smooth (Figure 1). The plant can be found distributed throughout Thailand.

There has been no previous report on the phytochemical study of this plant. Therefore, it would be interesting to conduct an investigation of the chemical composition of this *D. undulata* Wall. ex G. Don var. *cratericalyx* in order to acquire useful information on its chemistry and chemotaxonomy. This study deals with the isolation of the chemical constituents from the leaves of this *Diospyros* species and the identification and elucidation of their structures.



**Figure 1** *Diospyros undulata* Wall. ex G. Don var. *cratericalyx* (Craib) Bakh.  
.A Habit and fruits ; B Male flower ; C Fruit. ( from Phengklai, 1978 )