

1. INTRODUCTION

1.1 Introduction

The genus *Ceriops* (Rhizophoraceae) comprises two species: *Ceriops decandra* (Griff.) Ding Hou and *Ceriops tagal* (Perr.) C.B. Robinson. They are mangrove plants widely distributed from East Africa and Madagascar throughout tropical Asia and Queensland to Melanesia and Micronesia (Tomlinson, 1986). In Thailand, *C. decandra* has been found in Chonburi, Chantaburi, Krabi, Phuket, Satun, Surat Thani and Chumphon. It has many local Thai names: Prong Khao (โปรงขาว), Prong Nu (โปรงหนุ), Prong (โปรง) and also a synonym of *Ceriops roxburghiana* Arn. (Smitinand and Larsen, 1970).

Ceriops decandra (Griff.) Ding Hou is a shrub or small tree, up to 4 m high. Leaves are rounded, having obovate tendencies and a shiny green upper surface. The flowers are whitish and tend to be clustered on short, thick stalks. Fruit length is 1.0 - 1.5 cm, blunt apically and hypocotyl length up to 16 cm. The hypocotyl is often broadened at the lower end and may develop purple tip. The hypocotyl of *C. decandra* points up unlike that of *C. tagal* which hangs down. The bark from this species has been used as a folk medicine for treatment of diarrhea, vomiting, amoebiasis and ulcer (Bamroongrugs, 1999).

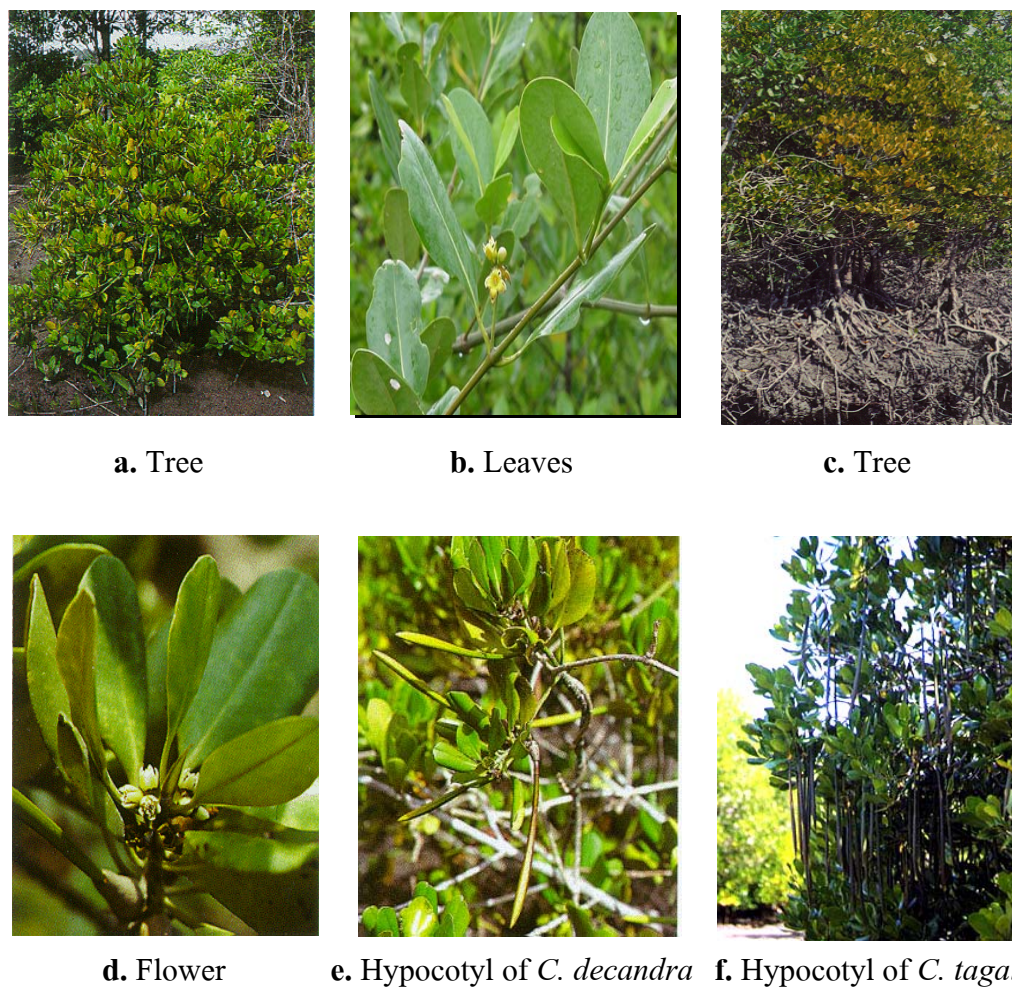


Figure 1 Parts of *Ceriops decandra* (Griff.) Ding Hou (**a-e**) and *Ceriops tagal* (**f**)

1.2 Review of Literatures

Chemical constituents isolated from the two species of *Cerriops* genus were summarized in **Table 1**. Information from NAPRALERT database developed by University of Illinois at Chicago and SciFinder Scholar copyright in 2005 will be presented and classified into groups: carbohydrates, diterpenoids, triterpenoids, and steroids.

Table 1 Compounds from plant of *Ceriops* genus

a. Carbohydrates **b.** Diterpenoids **c.** Triterpenoids **d.** Steroids

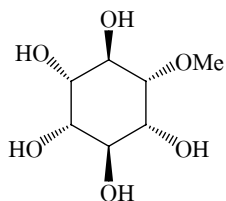
Scientific name	Investigated part	Compound	Bibliography
<i>C. decandra</i>	leaves	α -amyrin, 19c campesterol, 23d cholesterol, 24d lupeol, 20c oleanolic acid, 21c β -sitosterol, 25d stigmast-7-en-3 β -ol, 26d stigmasterol, 27d ursolic acid, 22c	Ghosh, <i>et al.</i> , 1985
	roots	ceriopsin A, 2b ceriopsin B, 3b ceriopsin B, 3b ceriopsin C, 4b ceriopsin D, 5b ceriopsin E, 6b ceriopsin F, 7b ceriopsin G, 8b	Anjaneyulu and Rao, 2002 Anjaneyulu, <i>et al.</i> , 2002 Anjaneyulu and Rao, 2003
<i>C. tagal</i>	shoots	1-D-1-O- methyl- mucosyl- inositol, 1a	Richter, <i>et al.</i> , 1990

Table 1 (Continued)

Scientific name	Investigated part	Compound	Bibliography
<i>C. tagal</i>	stems and twigs	tagalsin A, 9b	Zhang, <i>et al.</i> , 2005 (a)
		tagalsin B, 10b	
		tagalsin C, 11b	
		tagalsin D, 12b	
		tagalsin E, 13b	
		tagalsin F, 14b	
		tagalsin G, 15b	
		tagalsin H, 16b	Zhang, <i>et al.</i> , 2005 (b)
		tagalsin I, 17b	
		tagalsin J, 18b	

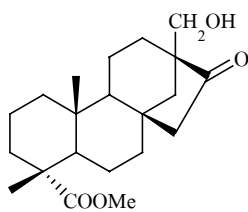
Structures

a. Carbohydrates

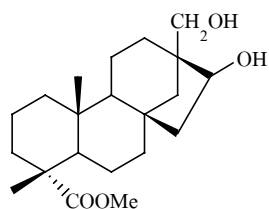


1a: 1-D-1-O- methyl- muco- inositol

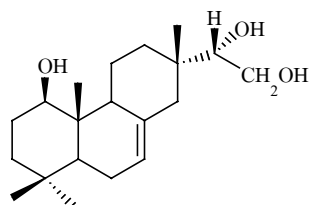
b. Diterpenoids



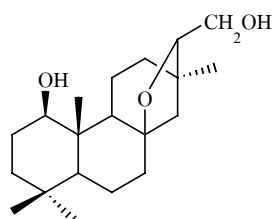
2b: ceriopsin A



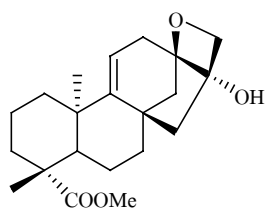
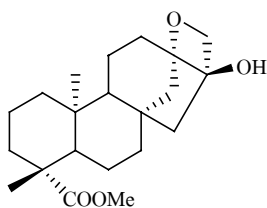
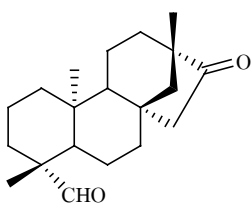
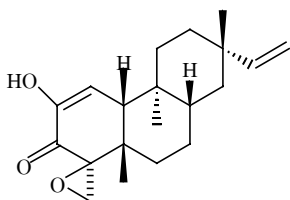
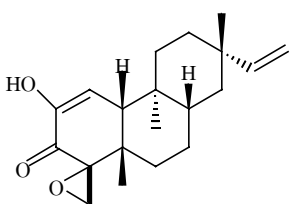
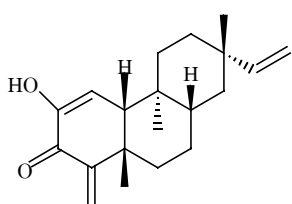
3b: ceriopsin B

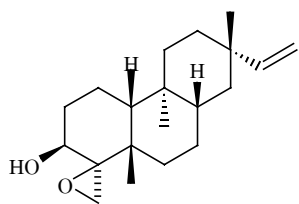
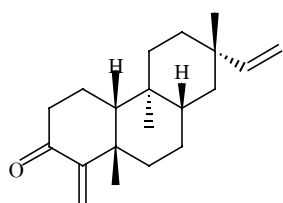
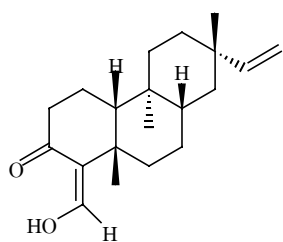
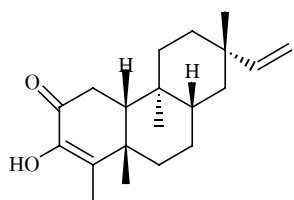
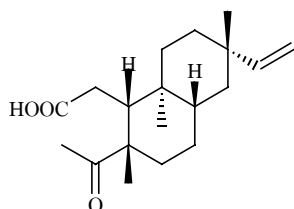


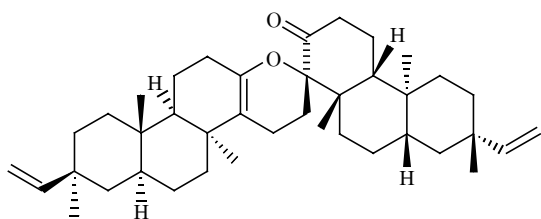
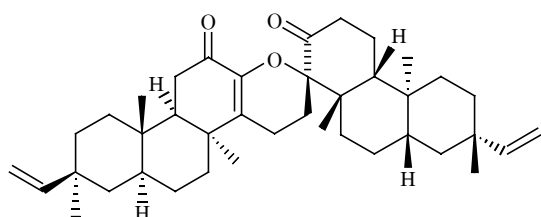
4b: ceriopsin C



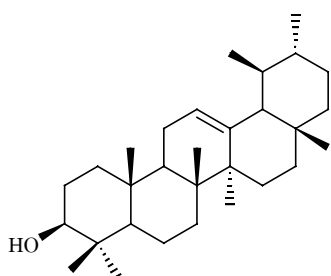
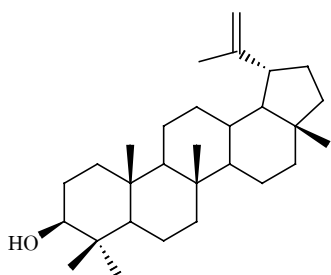
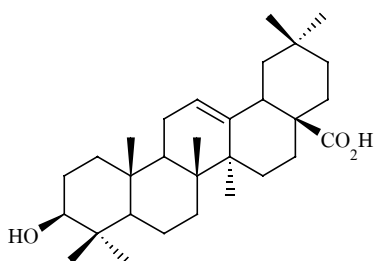
5b: ceriopsin D

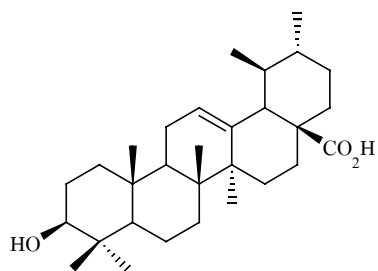
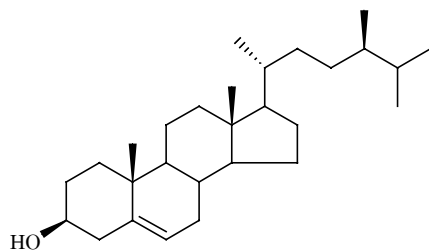
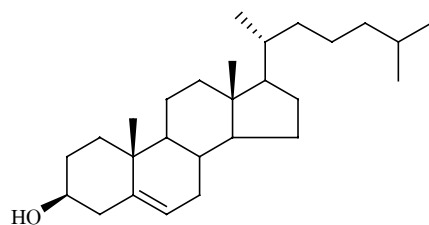
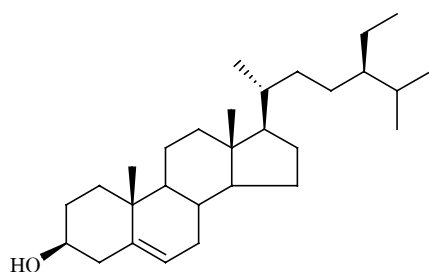
**6b:** ceriopsin E**7b:** ceriopsin F**8b:** ceriopsin G**9b:** tagalsin A**10b:** tagalsin B**11b:** tagalinsin C

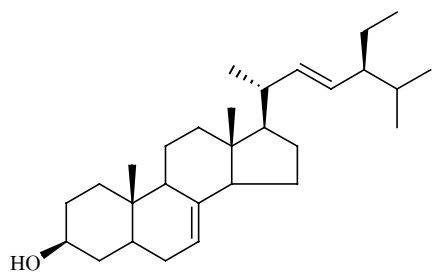
**12b:** tagalsin D**13b:** tagalsin E**14b:** tagalsin F**15b:** tagalsin G**16b:** tagalsin H

**17b:** tagalsin I**18b:** tagalsin J

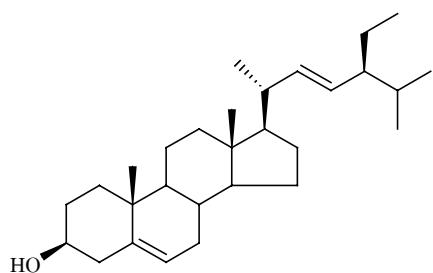
c. Triterpenoids

**9c:** α -amyrin**10c:** lupeol**11c:** oleanolic acid

**12c:** ursolic acid**d. Steroids****13d:** campesterol**14d:** cholesterol**15d:** β -sitosterol



16d: stigmast-7-en-3 β -ol



17d: stigmasterol