CHAPTER I

INTRODUCTION

Amoora gigantea Pierre ex. Laness. is a plant in the Amoora genus. It belongs to the Meliaceae family. There are 1400 species in over 50 genera in this family. In Thailand, it is known as *Taa Suer Bai Lek* and has been used as therapeutic drugs.

Amoora gigantea Pierre.[1,2] (or *Aglaia gigantea* Pelligrin.[3,4]) has been used in folk medicine. The wood can be used as an astringent, the bark as lull sputum, the fruits as a treatment for rheumatic pain, and the leaves as a treatment for inflammation.

According to its widely uses in medicine and the presence of compounds from the leaf of Amoora gigantea Pierre. was reported[5], these studies were undertaken on isolation and separation of organic compounds containing in the branch in order to search for compounds which might exhibit therapeutic values. Moreover, the chemical characterization of this plants may provide valuable information in the field of chemotaxonomy.

General Characterization of the plants in the Family Meliaceae [6]

Trees, rarely shrubs. Leaves alternate pinnate; leaflets opposite or alternate more or less at base. Flowers bisexual or unisexual regular in auxillary panicles usually racemose or spicate, white or yellow. Calyx 3- to 60 lobed rarely entire or with free

sepals, usually imbricate in bud. Petals 3-10, free, rare ly connate at base. Stamens 3-12 insert outside the disc; filament connate in tube; anthers sessile in the tube hardly exsert. Disc tubular, annular or obsolete. Ovary 3-celled; ovules 2 in a cell. Fruit capsular, drupaceous or baccate with coriaceous pericarp. Seed arillate. About 700 species, mostly tropical, both hemispheres.

General Characterization of the Plants in the genus Amoora [6]

Trees often large. Leaves usually imparipinnate; leaflets oblique. Flowers small, in auxillary fascicles often unisexual in the same panicle. Calyx 3- lobed, Petals 3 short concave imbricate. Stamen-tube sub-globose or campanulate, entire or 60 to 10-toothed; anthers 6 or 10. Disc obsolete. Ovary sessile 3- celled, cells 10 or 2- ovuled. Stigma sessile. Fruit capsular, sub-globose; pericarp coriaceous or woody 3-celled and 3-seeded loculicidully 3-valved or indehiscent. Seeds with a coloured fleshy aril usually only partly covering the seed. Species about 25, Indo-Malaya, and in Australia.

Amoora gigantea Pierre. is a large perennial tree up to 15-25 m. tall. It is a big shrub, flat and fragant yellow flowers like *Aglaia odorata* Lour. but it is bigger. Fruits are rounded or nearly so, hanging in cluster on long stem. Mature fruits are reddish that seem tiger's eyes and they are poisonous bitter.

The objectives of this research

1. To extract and isolate the chemical constituents from the branch of *Amoora gigantea* Pierre ex. Laness.
2. To identify the chemical structures of compounds which were isolated.

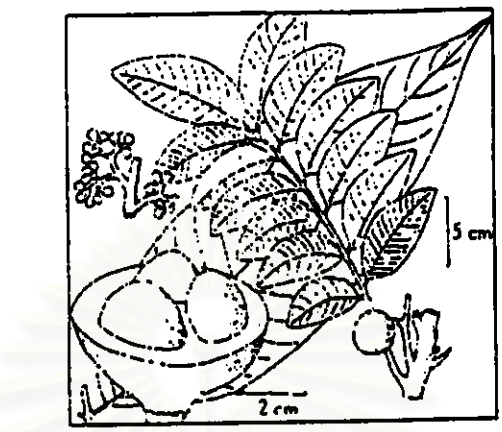


Figure 1 *Amoora gigantea* Pierre ex. Laness.

Research in chemistry and phamacological activity of the plants in Meliaceae

Table 1 Chemical constituent and phamacological activity of the plants in Meliaceae

Scientific Name	Chemical constituent	phamacological activity	Ref.
Aglaia elliptifolia Merrill.	rocoglamide	anti-leukemic	7
Aglaia roxburghiana	ethanolic extract	antivirus	8
Amoora grandiofolia	aphanamol I (1)	toxic principle	9
	aphanamol II (2)	toxic principle	
Azadirachta icdica	meliantriol	antifeedant	10
	azadirachtin	antifeedant	
	nimbionone	antibacterial	11
	nimbionol (3)	antibacterial	
	nimbidin	anti-ulcer	12
		anti-arthritic	
		anti-inflammatory	
		antipyretic	
Dysoxylum alliaceum	(+)-8-hydroxy-calamenene (4)	antibacterial	13
Dysoxylum binectariferum Hook.f.	dysobinin (5)	CNS-depressant	14
	ruhitukine (6)	analgesic	15
		immunodulatory activity	

Table 1 (continued)

Scientific Name	Chemical constituent	phamacological activity	Ref.
Dysoxylum binectariferum Hook.f.	ruhitukine	anti-inflammatory	16
Dysoxylum lenticellarare Gillespie.	dysoxyline (7)	cardiac effect	17
	3-epi-12-hydroxy-schellhammericine (8)	cardiac effect	
	lenticellarine (9)	molluscidal	18
	methanolic extract	cardio depressant	
Dysoxylum richii	dysoxysulfone (10)	antibacterial	19
Dysoxylum roseum C.DC.	dysorone E	exhibits moderate cytotoxic activity	20
Melia azedarach Linn.	N9GI	anti-tumor	21
	limonoid glycoside	antibacterial	22
	sendanin	anti-murine P-388 lymphocyticleukemia	23
	meliatoxin	acute nervous symthom	24
Melia volkeinsii Gurke	volkensin	antifeedant	25
Swierenia mahogani	swietemahonin A	inhibition against	26
	swietemahonin D	PAF-induced	
	swietemahonin E	aggregation	

Table 1 (continued)

Scientific Name	Chemical constituent	phamacological activity	Ref.
Swierenia mahogani	swietemahonin G	PAF antagonists	
Turraea nilotica	leiciresinol 4 mono-methyl ester (11)	anticancer	27

Research in chemical constituents of the plants in the genus Amoora

Table 2 Chemical constituents of the plants in the genus Amoora

Scientific Name	Plant part	Chemical constituent	Ref.
Amoora gigantea Pierre ex. Laness.	leaf	long chain hydrocarbon (C_{22-24}, C_{27-33}) octadecyl eicosanoate 5α-dammara-20(21),24-diene-3-one long chain alcohol (C_{32-33}) 5α-dammara-20(21),24-diene-3-β-ol stigmasterol β-sitosterol stigmasterol-3-O-β-D-glucopyranoside	5

Table 2 (continued)

Scientific Name	Plant part	Chemical constituent	Ref.
Amoora gigantea Pierre ex.	leaf	β-sitosterol-3-O-β-D-	5
Laness.		glucopyranoside	
Amoora rohituka W&A.	seed	palmitic acid (12)	28
(*Aphanamixis polystacha* Parker.)		stearic acid (13)	
		oleic acid (14)	
		linolenic acid (15)	
		linolenic acid (16)	
		rohitukin (17)	29
		rohitukine (18)	30
		limonoids (19-29)	31,32
		polystachin (30)	33
		stigmasta-5,24(28)-dien-3β-	34
		O-α-L-rhamnopyranoside	
		ash	35
		protein	
		crude fiber	
		crude starch	
		reducing sugar	

Table 2 (continued)

Scientific Name	Plant part	Chemical constituent	Ref.
Amoora rohituka W&A. (*Aphanamixis polystacha* Parker.)	stem bark	dammer-(20:21)-ene-(24:25)-epoxy--3β-O-α-L-rhamnopyranosyl-(1→4)-β-D-xylopyranoside	36
		β-sitosterol (31)	36,37
		stigmasterol (32)	
		soponin (33)	37
		1,5-dihydroxy-6,7,8-trimethoxy-2-methylanthra-quinone-3-O-β-D-xylopyranoside (34)	38
		naringenin 7,4′-dimethyl-ether-5-O-α-D-L-rhamnopyranoside (35)	
	root	amoorinin (36)	39
		poriferasterol-3-O-α-D-L-rhamnopyranoside (37)	40
		betulin-3-β-O-D-xylopyranoside (38)	41

Table 2 (continued)

Scientific Name	Plant part	Chemical constituent	Ref.
Amoora ruhituka Wall.	fruit	aphananin (21,23s-epoxytiru-call-7-ene-3β,21β,24,25-tetrol-3β-monoacetate) (39)	42
Amoora ruhituka Roxb.			
	stem bark	amoorinin (36)	43
Amoora grandiofolia	seed	dihydrorobinetin-7-β-D-glucopyranosyl-α-L-rhamnopyranoside	44
(*Aphanamixis grandiofolia*)			
		amoorastatin (40)	45
		amoorastatone (41)	46
		12-hydroxy-amoorastatin (42)	
Amoora wallachi	fruits	aphanamols I and II (1,2)	47
	heartwood	β-sitosterol (31)	48

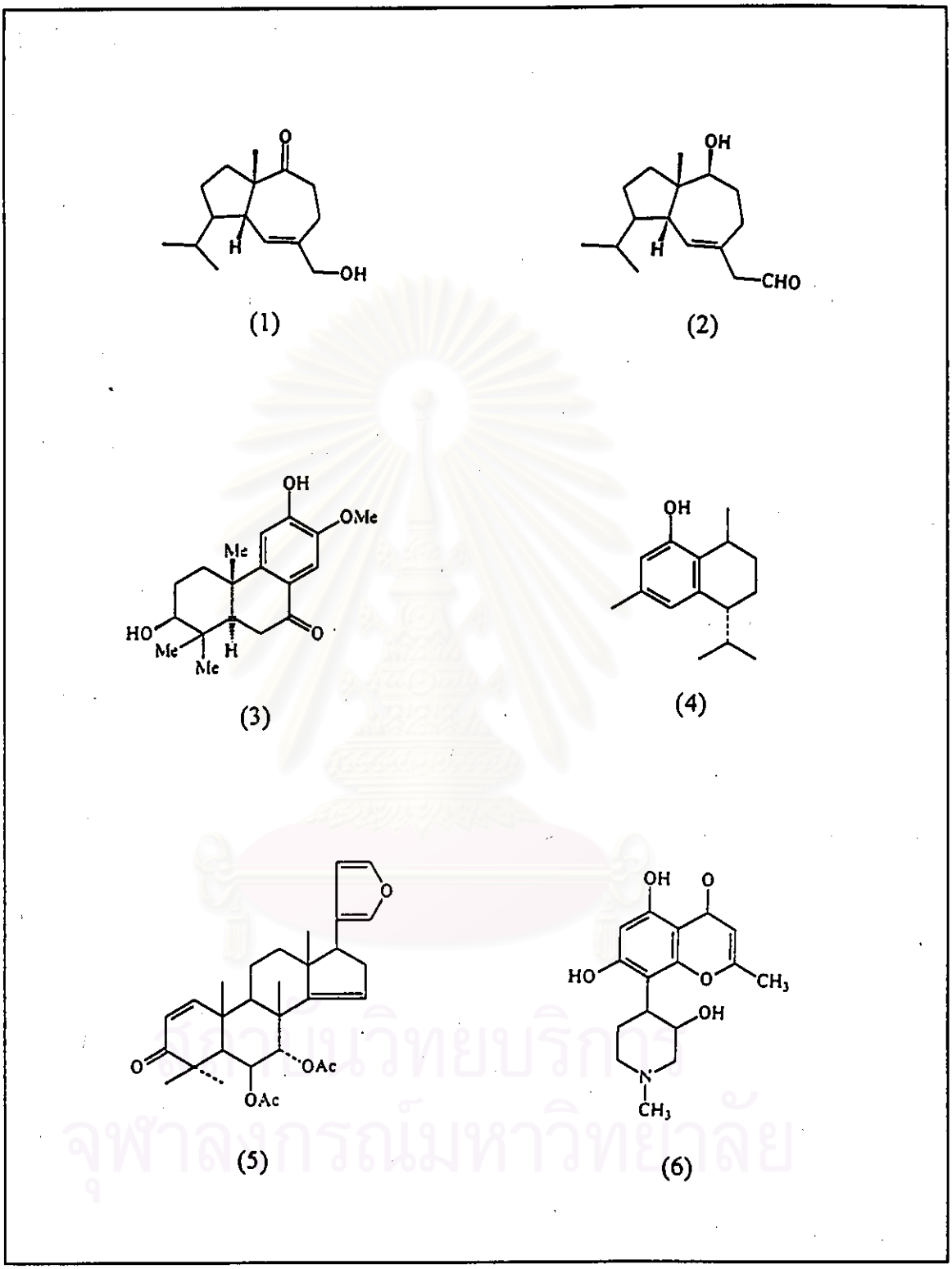
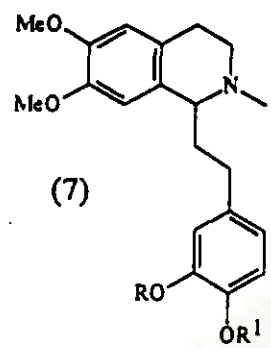
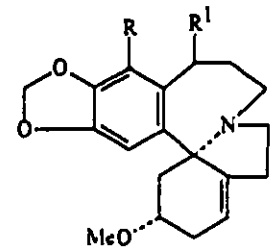


Figure 2 Chemical constituents of the plants in the family Meliaceae and the genus Amoora.



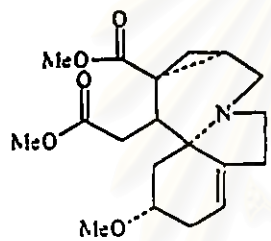
(7)

R, R^1 = -CH$_2$-



R = H, R^1 = OH

(8)



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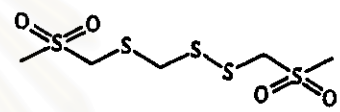
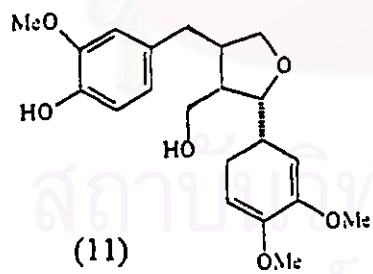


(10)

$CH_3(CH_2)_{14}COOH$

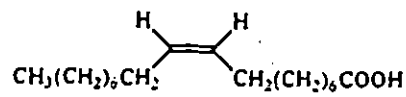
(12)



(11)

$CH_3(CH_2)_{16}COOH$

(13)



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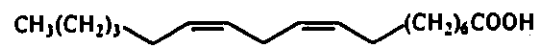

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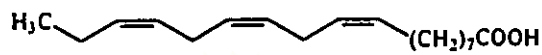

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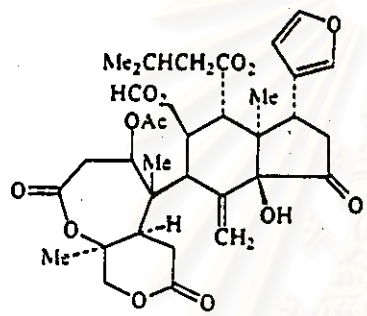

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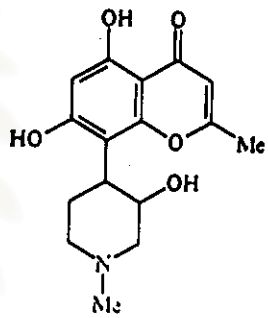

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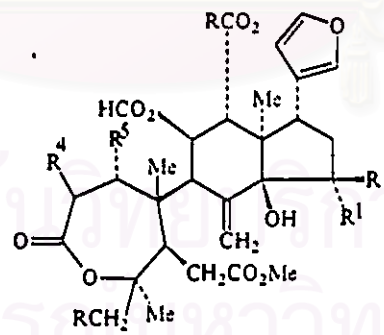


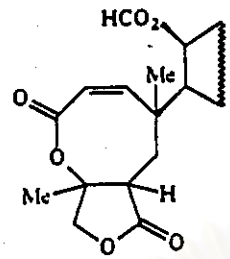
(19) R = Me_2CHCH, R^1 = R^3 = Oac, R^2-R^4 = H

(20) R = EtCHMeCHCH(OH) R^1 = R^3 = Oac, R^2 = R^4 = H

(21) R = Me_2CHCH_2, R^1R^2 = O, R^3 = Ac, R^4 = H, R^5 = Oac

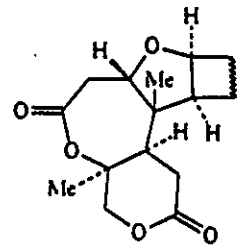
(22) R = Me_2CHCH_2, R^1 = Oac, R^2 = H, R^3 = Ac, R^4 R^5 = bond

Figure 2 (continued)



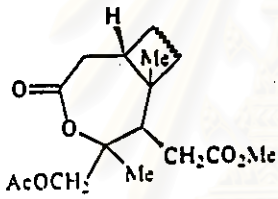
(23) R = EtCHMeCH(OH), R^1 = OAc, R^2 = H

(24) R = Me_2CHCH_2, R^1 = OAc, R^2 = H

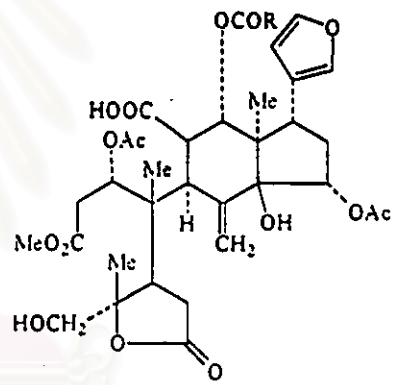


(25) R = EtCHMeCH(OH), R^1R^2 = O

(26) R = EtCHMeCH(OH), R^1 = Oac, R^2 = H

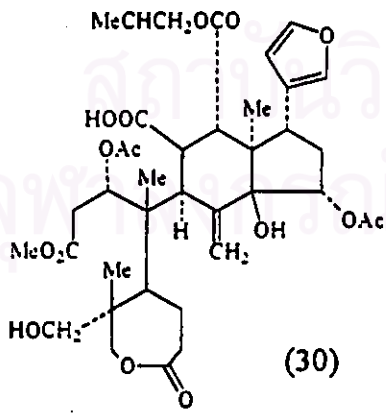


(27) R = Me_2CHCH_2, R^1 = Oac, R^2 = H



(28) R = Me_2CHCH_2

(29) R = EtMeCHCH(OH)



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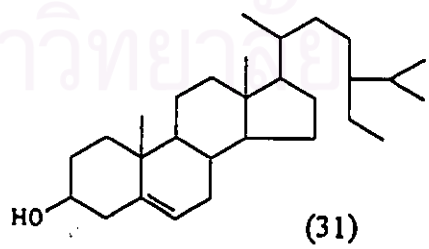

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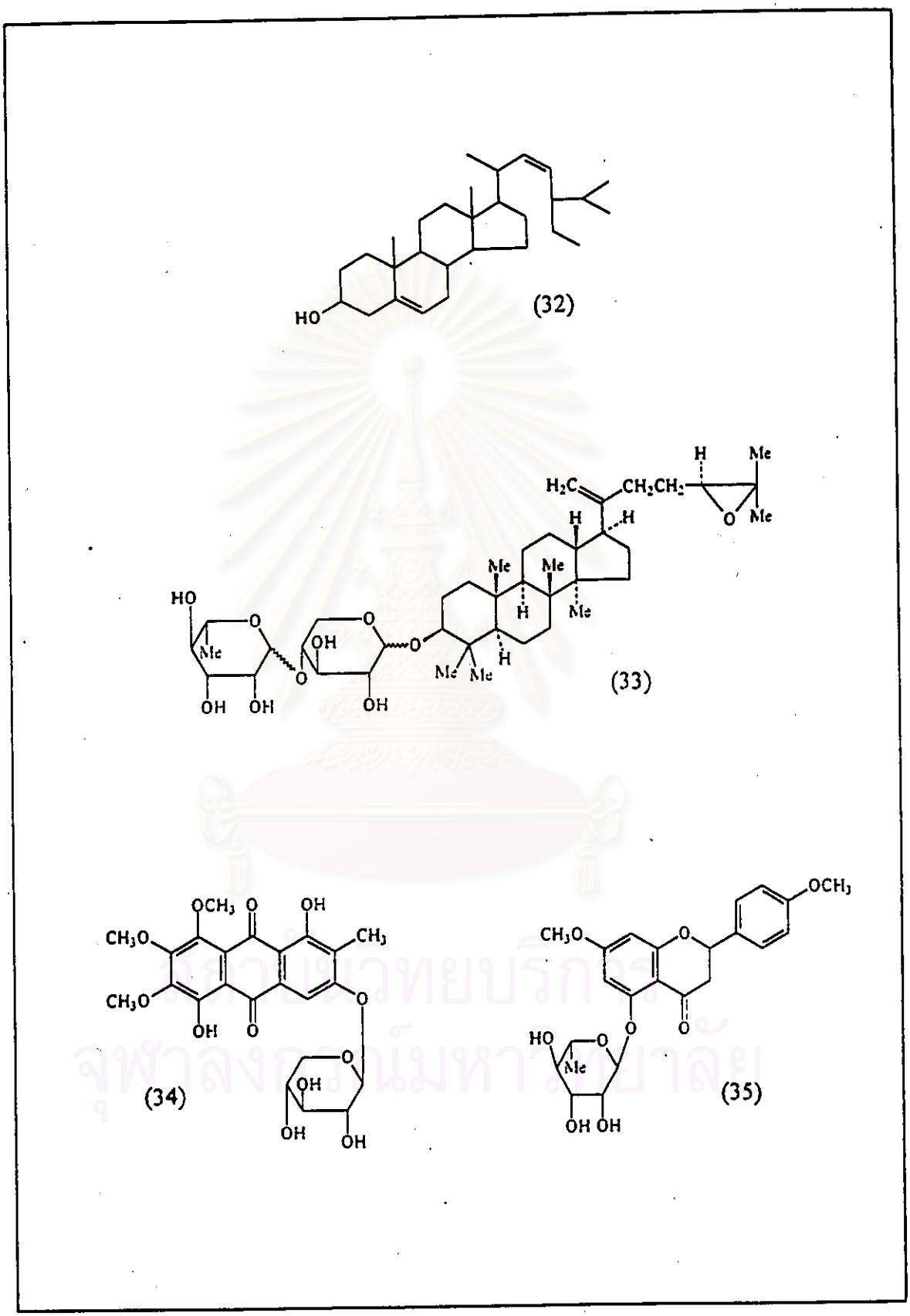

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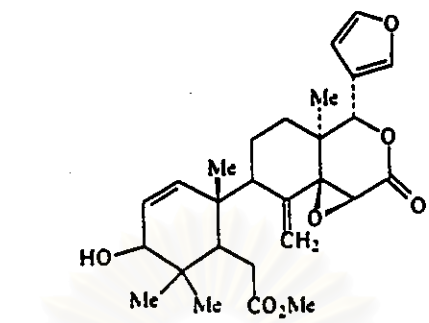

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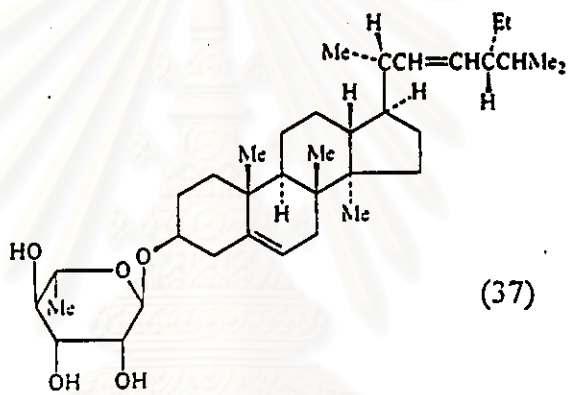

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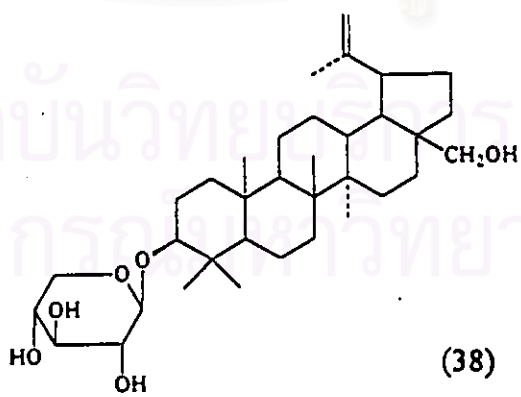

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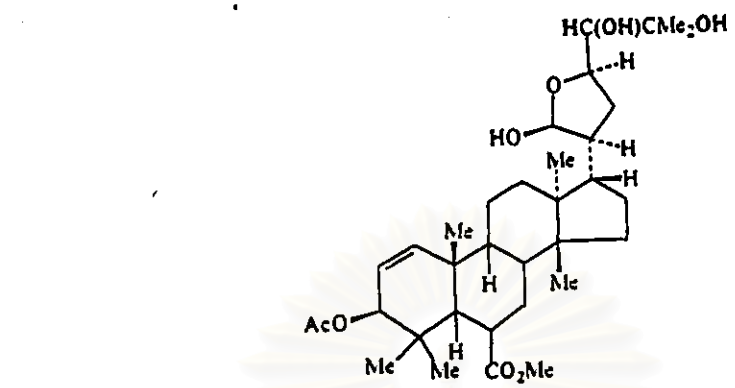

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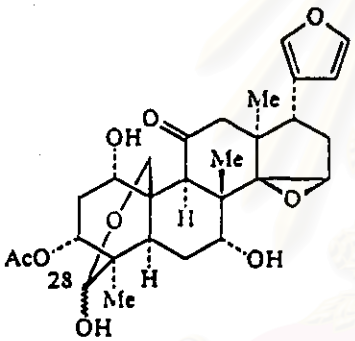

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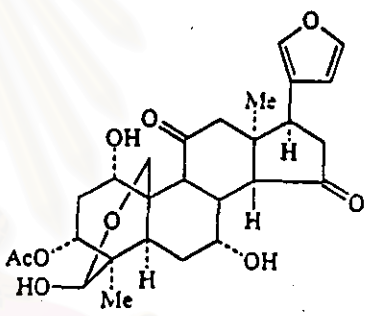

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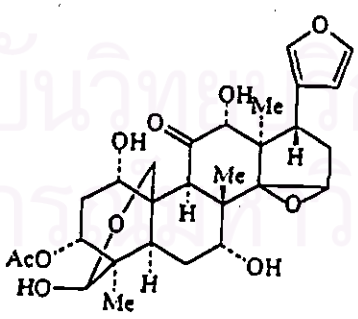

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