CHAPTER II

LITERATURE REVIEWS

Previous Study of Diterpenoid Compounds of Genus *Croton*

From the literature surveys, genus *Croton* has been widely studied and many diterpenoid compounds have been isolated and characterized in table below.

Table 1 Diterpenoid compounds of genus *Croton.*

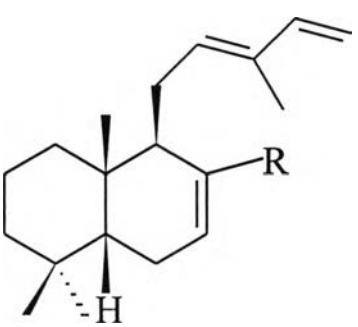
Botanical Names	Plant Parts	Organic Compounds	Reference
C. oblongifolius	stem barks,	oblongifoliol acid	[7]
	wood	labda-7,12(*E*),14-triene	[4]
		labda-7,12(*E*),14-triene-17-al	[4]
		labda-7,12(*E*),14-triene-17-ol	[4]
		labda-7,12(*E*),14-triene-17-oic acid	[4]
		crotocembraneic acid	[1,5,6]
		neocrotocembraneic acid	[5,6]
		neocrotocembranal	[5]
		crotohalimaneic acid	[5]
		crotohalimoneic acid	[5]
		benzoyl crotohalimanolic acid	[5]
		covatin	[5]
		isokolavenol	[5]
		nidorellol	[5]
		poilaneic acid	[5]
	leaves	neocrotocembraneic acid	[3,6]
C. sublyratus	stem barks	furanoditerpenes: plaunol A,B,C,D,E	[8]
		ent-16β,17-dihydroxykaurane	[10]
		ent-3α-hydroxy-13-epimanool	[10]
	leaves	plaunotol	[9]

Table 1 Diterpenoid compounds of genus *Croton.* (continue)

Botanical Names	Plant Parts	Organic Compounds	Reference
C. cascarilloides	stem barks	magnoflorine styphnate	[11]
		picrate	[11]
		β-sitosterol	[11]
C. hutchisonianus	stem barks	*ent*-kauran-16β,17-diol	[12]
		ent-kauran-16β,17,18-triol	[12]
C. poilanei	leaves	poilaneic acid	[14]

From the study of chemical constituents found in the stem bark of *Croton oblongifolius* Roxb. from various locations in Thailand, it was found that the main components were different. The chemical constituents found in *C. oblongifolius* could be categorized into four groups including cembrane diterpenoid, clerodane diterpenoid, labdane diterpenoid, and halimane diterpenoid compounds.

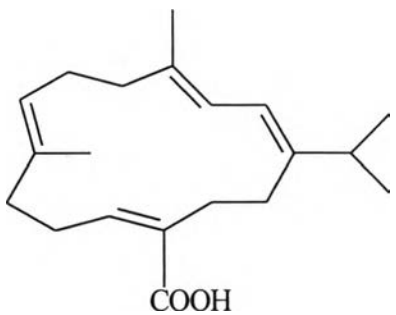
Labdane Diterpenoid



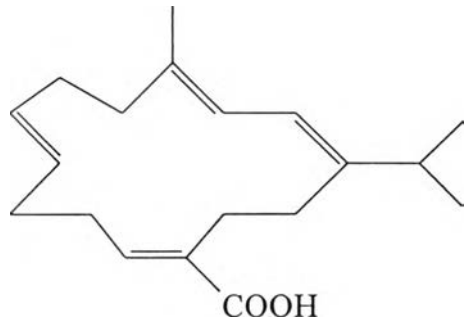
R = CH_3	labda-7,12(*E*),14-triene
= CHO	labda-7-12(*E*),14-triene-17-al
= CH_2OH	labda-7,12(*E*),14-triene-17-ol
= COOH	labda-7,12(*E*),14-triene-17-oic acid

Figure 2 The structure of the diterpenoid compounds from *C. oblongifolius*

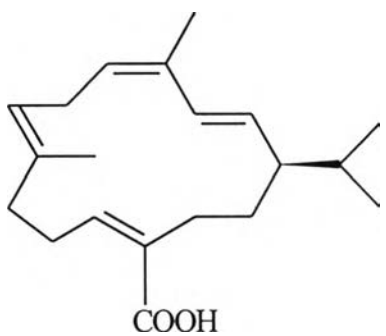
Cembrane Diterpenoid



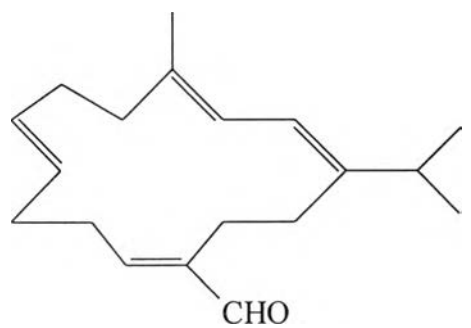
crotocembraneic acid



neocrotocembraneic acid

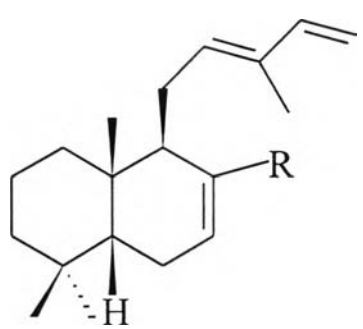


poilaneic acid



neocrotocembranal

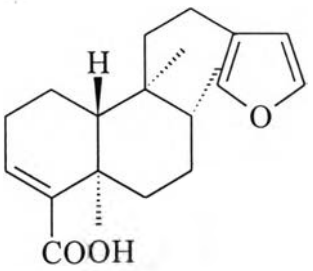
Labdane Diterpenoid



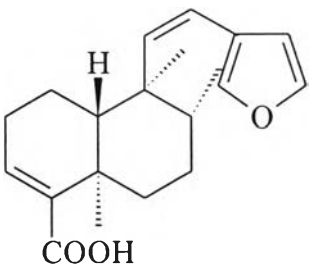
R = CH_3	labda-7,12(*E*),14-triene
= CHO	labda-7-12(*E*),14-triene-17-al
= CH_2OH	labda-7,12(*E*),14-triene-17-ol
= COOH	labda-7,12(*E*),14-triene-17-oic acid

Figure 2 The structure of the diterpenoid compounds from *C. oblongifolius* (continue)

Clerodane Diterpenoid

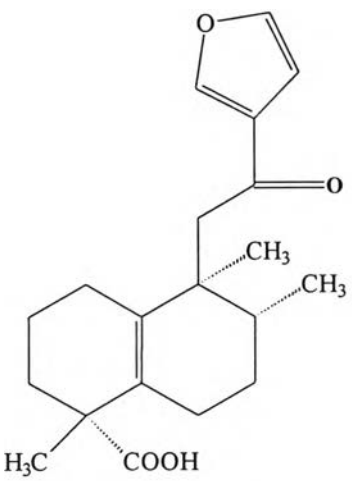


(-)-Hard wickiic acid

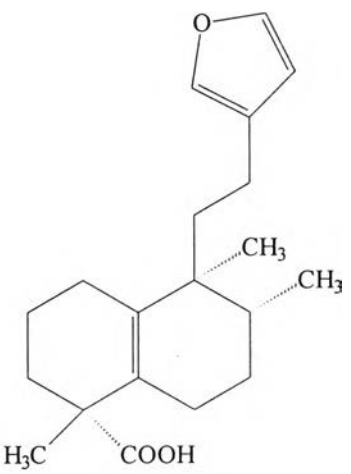


11-Dehydro(-)-hardwickiic acid

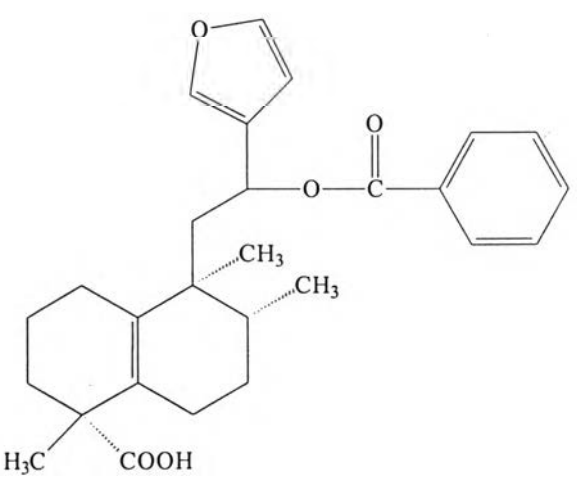
Halimane Diterpenoid



Crotohalimoneic acid



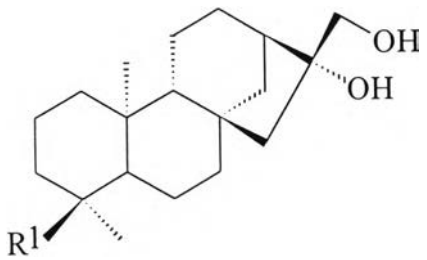
Crotohalimaneic



Benzoyl crotohalimanolic acid

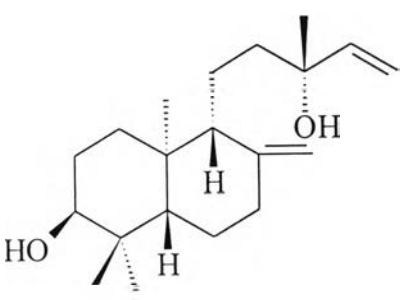
Figure 2 The structure of the diterpenoid compounds from *C. oblongifolius* (continue)

The structures of diterpenoid compounds of genus *Croton* were shown below.

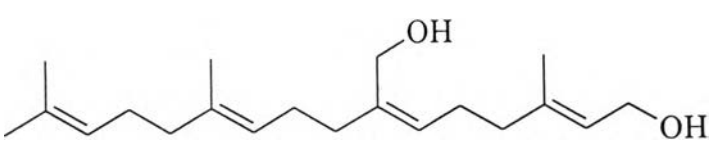


R^1=H *ent*- kuran-16β,17-diol

=CH_2OH *ent*-kuran-16β,17,18-triol

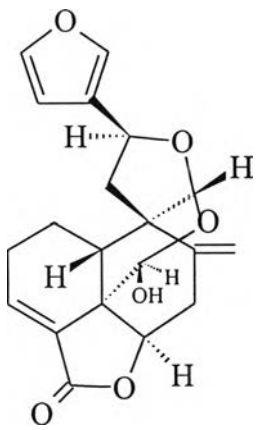


ent-3α-hydroxy-13-epimanool

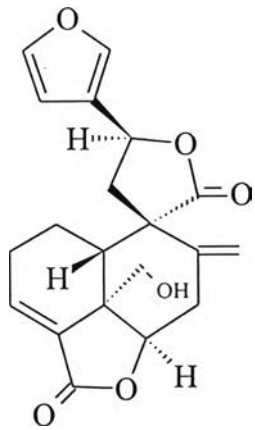


18-hydroxygeranylgeraniol (plaunotol)

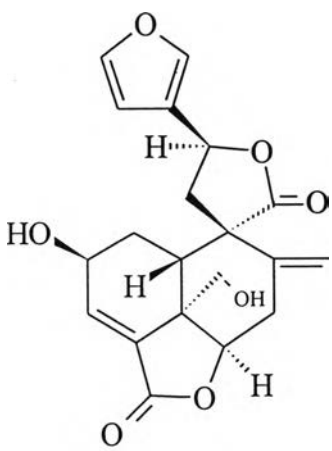
Figure 3 The structure of the diterpenoid compounds from Genus *Croton*



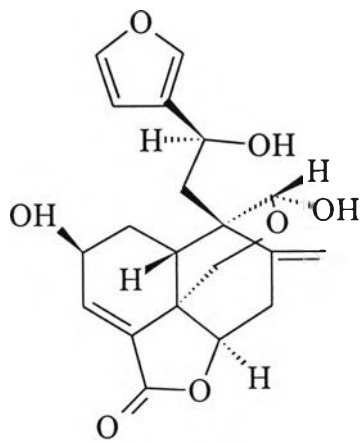
plaunol A



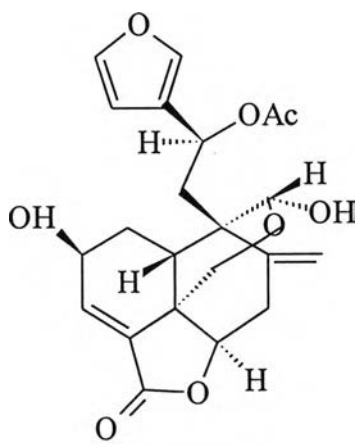
plaunol B



plaunol C



plaunol D



plaunol E

Figure 3 The structure of the diterpenoid compounds from Genus *Croton* (continue)