CHAPTER I

INTRODUCTION

A kind of the natural products that we know as medicinal plants are developed from man's hopeless effort to succeed in physical suffering. Nowadays, the inclination for the use of herb drugs are increasing because of its harmless side effects. Therefore the techniques in natural product research have been developed for being safer and more effective. Even extraction and isolation of chemical constituents from Plao Yai have been done for ages but the new compounds are still discovered and give effective in bioactivity. For instance antipeptic ulcer, anticancer.

Plao Yai is put into the Euphorbiaceae family. Its scientific name is *Croton oblongifolius* Roxb.[1] In the central part of Thailand called Plao Yai and in the northern part called Plao Luang. Plao Yai can be easily found in many forrest's type such as evergreen forest, deciduous forests and groves of brushwood.

Croton oblongifolius Roxb. (Euphorbiaceae) is a medicinal plant that can be easily found in all parts of Thailand. There were various chemical constituents from *C. oblongifolius* including diterpenoid compounds. Some diterpenoid compounds that was found in *Croton oblongifolius* such as Labda-7,12 (*E*),14-triene and its derivatives from Prachuab Kirikhan province [2], 3-acetoxy-labda-8(17),12(*E*),14-triene-2-ol, 2-acetoxy-labda-8(17), 12(*E*),14-triene-3-ol, and labda-8(17),12(*E*),14-

triene-2,3-diol from Wang Sa Phung, Loei province [3], neocrotocembraneic acid and neocrotocembranal from Amphoe Vicheinburi Petchaboon province [4], crotohalimaneic acid, crotohalimneic and benzoyl crotohalimanolic acid from Pakchong, Nakornrachsima province [4].

The previous studied in cytotoxic activity against human tumor cell lines of diterpenoid compounds from *C. oblongifolius* showed that many of them exhibited strong cytotoxicity activity such as Labda-7,12 (*E*),14-triene-17-al showed strong activity against HEP-G2 (hepatoma), SW 620 (colon), CHAGO (lung), KATO-3 (gastric), and BT 474(breast), Labda-7,12 (*E*),14-triene-17-ol showed strong activity against HEP-G2 (hepatoma), SW 620 (colon), KATO-3 (gastric), and BT 474(breast) [2], neocembraneic acid showed weak activity against HEP-G2 (hepatoma), SW 620 (colon), KATO-3 (gastric), and BT 474(breast) while its derivative (methyl crotocembraneate) showed strong activity against SW 620 (colon), KATO-3 (gastric), and CHAGO (lung) and showed moderated activity against HEP-G2 (hepatoma), and BT 474(breast) [4], neocrotocembranal showed strong activity against SW 620 (colon) and KATO-3 (gastric) [4]. 3-acetoxy-labda-8(17),12(*E*),14-triene-2-ol was active with KATO-3 (gastric), and SW 620 (colon) while 2-acetoxy-labda-8(17), 12(*E*),14-triene-3-ol was active with KATO-3 (gastric), and BT 474(breast) [3].

Because of *C. oblongifolius* is available in all part of Thailand and the in previous studied showed that many isolated diterpenoid compounds exhibited strong cytotoxic activity against human tumor cell lines. Therefore, it is challenge to investigate the chemical constituents of *C. oblongifolius* from other areas which do

not mention before. This research examined about the diterpenoid compounds *C. oblongifolius* from Amphoe Sai Yok, Kanchanaburi provinceand investigated their cytotoxic activity against human cancer cell lines.

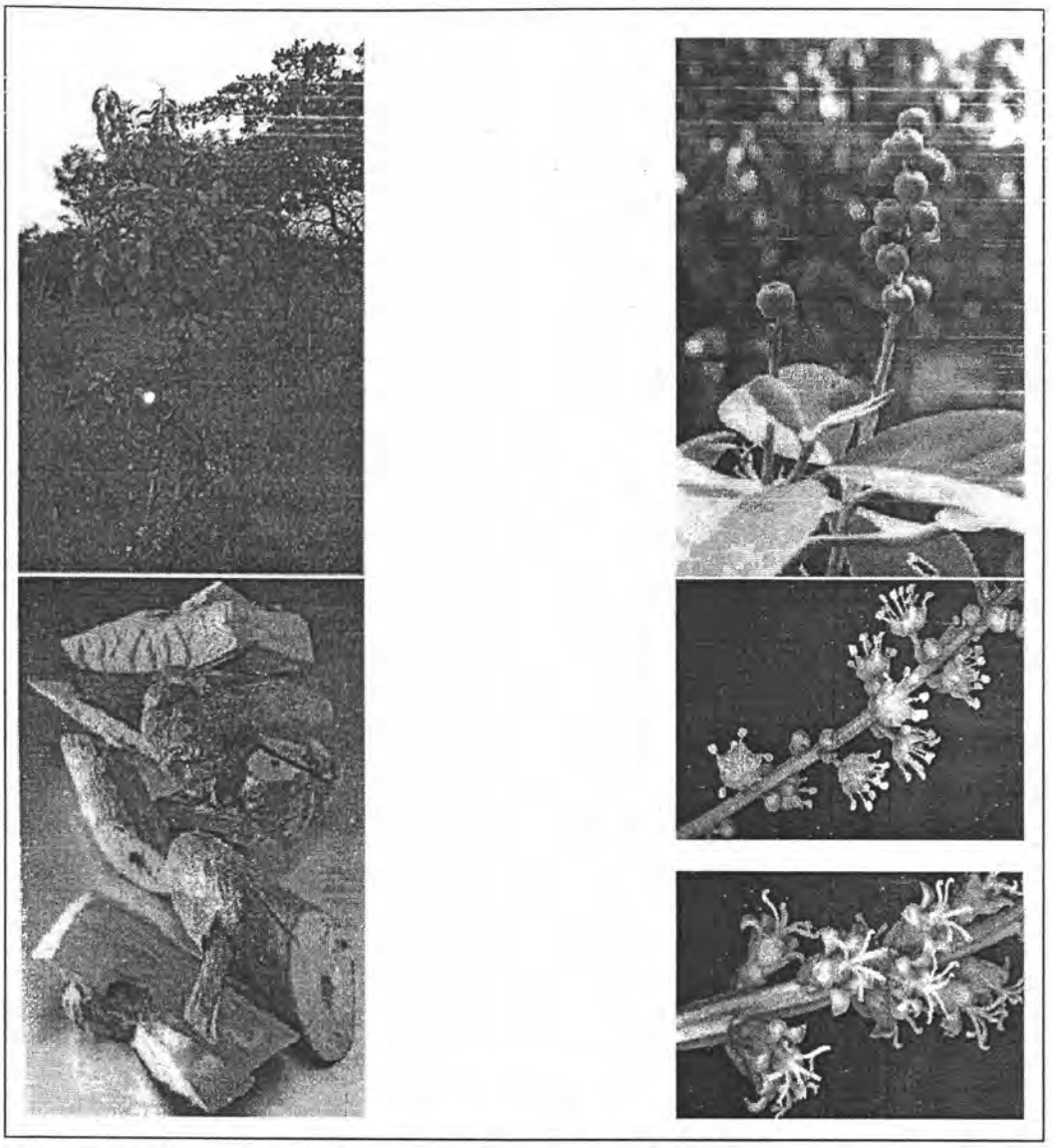

Figure 1: **The stem bark, leaves, flowers and fruits of** *Croton oblongifolius.*

According to the previous studied, the stem barks of *Croton oblongifolius* Roxb. can be used as drug and some diterpenoids compounds, isolated and characterized from *Croton oblongifolius* Roxb., give biologically active results. By the way, Plao Yai which are collected in different area would give different diterpenoid compounds. Therefore it was decided to re-investigate diterpenoid compounds from the stem bark of *Croton oblongifolius* Roxb.

Thus, the objective of this reserch will be summarized as follows:

1. To examine the chemical constituents of stem bark of *Croton oblongifolius* Roxb. from Amphoe Sai Yok, Kanchanaburi province.
2. To characterize the isolated diterpenoid compounds.
3. To investigate the cytotoxity against human tumor cell lines of the isolated compounds.