

CHAPTER I

INTRODUCTION

Since mankind first displayed susceptibility to disease and injury, the discovery of medicinal agents from renewable resources has been essential and intrinsic aspects of all involving cultures. The use of natural products with therapeutic properties is as ancient as human civilization. The main sources of drugs are from minerals, plants and animal products [1,2]. About 25 % of the drugs, prescribed worldwide come from plants, approximately 120 such active compounds being in current use. Terrestrial plants are an especially viable opportunity for the discovery of biologically active natural products which may serve as commercially significant entities in their own right, or which may provide frameworks for the investigation of modified derivatives possessing enhanced activity and/or reduced toxicity [1]. Of the 252 drugs considered as basic and essential by the World Health Organization (WHO), 11 % are exclusively of plant origin and a significant number are synthetic drugs obtained from natural precursors. Examples of important drugs obtained from plants are steroids, cardiotonic glycosides (digitalis glycosides), anticholinergics (belladonna type tropane alkaloids), analgesics and antitussives (opium alkaloids), antihypertensives (reserpine), cholinergics (physostigmine, pilocarpine), antimalarials (cinchona alkaloids), antitumor (colchicine), anesthetic (cocaine) [3-5].

One disease of current concern on a global basis is cancer, which is needed for continued efforts to discover new template molecules from natural sources for these afflictions. There have been reported that two plants, the periwinkle (*Catharanthus roseus*) and the May apple (*Podophyllum peltatum*) provide important compounds, vincristine (Oncovin®) and podophyllotoxin, which have activity against cancer [6]. This discovery stimulated research toward more active compounds. Thailand is located in tropical hemisphere, and has biological diversity characteristic. Many types of plants exhibit interesting biological activities, especially in pharmaceutical aspect. For example, Plao noi (*Croton sublyratus* Kurz), a thai medicinal plant, has been used an anti-peptic ulcer drug [7].

Plao Yai, *Croton oblongifolius* Roxb. (Euphorbiaceae) [8] is found in evergreen forest, deciduous forest and the groves or brushwood which are not more than 700 metres above the sea level [9]. Interfering to Thai pharmacopoeia, all parts of Plao Yai are usefulness in herbal remedy. For example, the bark is able to restrain chronic enlargement of the liver. The leaf has capability of restoration or cure scabies, chloasma and leprosy. The fruit and seeds are used for stimulated bowel movements or laxative. Flowers can destroy parasites. The heartwood is used to relieve feebleness and unconsciousness. In addition, the roots can treat diarrhea, dysentery, rheumatism and chronic inflammation of the joints. However, large doses of the roots are poisonous and harmful [10].

Recent work in our research group, has been reported that compounds isolated from the stem barks of *Croton oblongifolius*, are active against cancer cell lines. However there are diversity of chemical constituents in the stem bark of this plant from different source. According to a screen test, the $^1\text{H-NMR}$ spectra of hexane extract from the stem bark of *Croton oblongifolius* from Sakolnakorn province and other province are different. Therefore, it was intended to re-investigate the chemical constituents of *Croton oblongifolius*.

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The purposes of research

1. To extract and isolate the chemical constituents of stem bark of *Croton oblongifolius* from Sakolnakorn province
2. To identify the structural formula of the isolated compounds.
3. To investigate the cytotoxic activity against human cancer cell lines of isolated compounds.



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