

CHAPTER 1

INTRODUCTION

Microbes, especially fungi are large living groups. They play several distinctive roles in ecosystems: as saprotrophs, as parasites of plants and animal, as mutualistic symbionts of many phototropic organisms e.g. cyanobacteria and algae in the form of lichens, and as mycorrhizal partners of vascular plants (Neville and Jonh,1995) and many fungi have been used as source of antibiotic or bioactive compound. For example, *Aspergillus*, *Penicillium* and *Trichoderma*. Currently 5 % of the world's fungi have been identified (Bacon and White,2000). They exists in wide range of habitats such as fresh water and the sea, soil, litter, decaying remains of plants and animals, dung, in living plants and animals. Recently one group of fungi that has attracted is the endophytic fungi because of they likely to produce some bioactive compounds that can be useful for pharmaceutical or agricultural industry.

Endophytic fungi are microorganism that commonly live in intracellular spaces of living plant hosts. The associated of these fungi with higher plants rang from mutualistic symbiosis or commensalism to borderline latent pathogenicity (Strobel and Long,1998). They may provide their hosts with metabolites and other potentially useful bioactive compounds. These fungi are likely an important resource for novel metabolite as antibacterial, antifungal, antiviral, and anticancer activity. For example, Taxol an anticancer drug from *Pestalotiopsis microspora* an endophytic fungi that live in pacific yew tree, Astersolanol A, the antibacterial compound produced from *Phoma* sp. (Strobel and Long,1998) and Dicerrandrol A,B,C a new antibiotic and cytotoxic dimer from *Dicerandra frutescans* (Wagenaar and Clardy,2001).

In this reseach, *Croton sublyratus* Leaf was employed as a plant source of fungi because *C. sublyratus* is a Thai folk medicine for anthelmintic and dermatologic agent for skin disease (ลัดดาวัลย์ บุญรัตน์กรกิจ,2535).The plant parts of stem, bark and leaf have been used as antidiarrheal and normalize menstruation (คุณะเมสัชศาสตร์ มหาวิทยาลัยมหิดล,1990). In addition, the leaves of these plant are used as material for

extracting an antipeptic ulcer substance, namely Plaunotol (ณรงค์ เพ็งปรีชา,2530; นันทวัน บุญยะประกาศ,บรรณานุกรม,2532).

Objectives

1. To isolate endophytic fungi from *Croton sublyratus* leaves.
2. To determine biological activities of the isolated endophytic fungal, including antibacterial and antifungal activities.
3. To identify a selected endophytic fungal isolate by using classification based on morphology and nucleotide sequence of ITS regions of rDNA.
4. To extract, isolate and purify the bioactive compounds from a selected endophytic fungal isolate.
5. To elucidate the structural formula of the isolated bioactive compounds.
6. To evaluate the biological activity of the bioactive compounds obtained.