CHAPTER I

INTRODUCTION

An increase in the number of people in the world having health problems caused by certain cancer, drug-resistant bacteria, parasitic protozoans, and fungi has caused alarm. An intensive search for newer and more effective agents to deal with these problems is now underway. The fungi are a potential source of novel chemistry and biology to assist in helping solve not only human health, but plant and animal health problems also. The fungi are a very large and diverse group of organisms. So far more than 4,000 fungal metabolites are described (Dreyfuss and Chapela, 1994) and 5,000-7,000 taxonomic species have been studied with respect to their chemistry (Hawksworth, 1991). In 1995 Hawksworth estimated the probable number of existing fungi to be 1.5 million with only 71,000 being described so far. Apparently, the majority of fungi inhabiting the world has not yet been described. The implicates fungi to represent an enormous source for natural products with diverse chemical structures and actives. The fungi can be found throughout an environment such as in the fresh water, sea water, soil, decay, dung, include in the living plant and animal tissue. Fungi from special source like plant may also produce novel compounds possessing biological activities. For the fungi which live inside plant tissue are called "endophytic fungi".

Endophytic fungi are fungi that live almost their entire life cycle in the tissue of living plants with unapparent and asymptomatic infections. At first the endophyte research began with their demonstrable role in mediation interactions of herbivores with some grass host plants (Petrini, 1991) and then, most of them have been carried out using plants from temperate and tropical regions. Endophytic fungi are fungi which live almost entirely within the leaves and stems of apparently healthy host plants, doing so asymptomatically, causing no visible signs of infection (Isaac, 1992). Recent interest has focused on endophytic fungi for their pharmaceutical, medicinal, and agricultural potential. For example, the fungal endophytes *Taxomyces andreanae* and *Pestalotiopsis micorspora*, and several other fungi which are isolated from the barks of the yew trees, are potential new sources of the anticancer drug taxol. Furthermore, the clavicipitaceous grass endophytes are known to produce indole

derivatives and other products that are active as plant hormones, antifungal agents, hallucinogens, vasoconstrictors, etc. (Bacon and White, 2000).

Thus, in this research the Thai medicinal plant, *Hydnocarpus anthelminthicus* Pierre ex Laness. have been used as a plant source of endophytic fungi because the stem, leaf, root, fruit, and seed of this plant have been used traditionally as a folk remedy for cancer, inflammatory, mycobacteriosis, leprosy, scabies, impetigo and some other dermatitides (ธงชัย เปาอินทร์, 2544).

Objectives

1. To isolate the endophytic fungi from *Hydnocarpus anthelminthicus* Pierre ex.
2. To identity the isolated endophytic fungi.
3. To extract, isolate and purity the bioactive compounds from selected endophytic fungi.
4. To elucidate the structure of the isolated bioactive compounds.
5. To evaluate the biological activity of the bioactive compounds.