CHAPTER 1

INTRODUCTION

In the recent years, the medical sciences are rapidly progress and the modern medicine are used in intervention for several diseases. Natural products have shown an important role in the drug discovery processes since ancient time as human civilization and natural products have provided the compound for semi-synthetic manipulations and templates for total synthetic modification of the novel drugs (Kinghorn, 2001). When compared with the libraries of synthetic substances, some natural products offer the prospects of discovering a greater number of compounds with sterically more complex structures, particularly in the areas where good synthetic leads do not exist (Raskin *et al.*, 2002). About 25 % of the drugs come from plants, 121 of active compounds being in current use. About 252 drugs were considered as basic and essential by the World Health Organization (WHO) and 11 % of significant plants were synthetic drugs (Rate, 2001). The traditional system of medicine including the traditional Chinese, native American which sustained the communication for thousands of years and provide 74 % of the plants-pharmaceutical agents. However, the potential uses of plants as a source of new drugs are still poorly explored.

Today, various Thai herbal plants are used widely for preparing of herbal medicine. One of which is *Piper sarmentosum* Roxb. (Piperaceae), also called “Cha Plu” in Thai. *Piper sarmentosum* Roxb. is one of the most interesting medicinal plants because it is easily cultivated, harvested and widely used as food or decorations. Cha Plu is a climbing and creeping plant and widely distributed throughout Thailand. The leave was thin, 7-15 centimeter long, 5-10 centimeter wide, dark green color, heart-shape and spicy taste (Saralamp, 1996; Suvatti, 1978). In addition, it was used as a medicinal herb because various parts of this plant, for example fruit, leave or root, contains many biologically active compounds e.g. sarmentine and sarmentosine from fruit (Likhitwitayawuid *et al.*, 1987) and β–sitosterol from leaves (Niamsa and Chantrapromma, 1983). Cha Plu has different pharmacological activities as the aqueous extract of the leaves has been reported to reduce the blood sugar in alloxan-induced diabetic rabbits (Pongmarutai, 1980). The aqueous extract of the whole plant showed a hypoglycemic effect in rats (Peungvicha *et al*., 1998). The methanolic extract of the leaves was found to exhibit a marked

neuromuscular blocking activity in rat phrenic nerve-hemidiaphragm preparation (Ridtitid *et al*., 1998) while the chloroform and methanol extracts of the leaves showed considerable antiplasmodial activity against *Plasmodium falciparum* and *Plasmodium berghei* parasites (Rahman *et al*., 1999). Additionally, the crude methanolic extract of *Piper sarmentosum* root had an antiprotozoal activity against *Entamoeba Histolytica* infected in caecum of mice (Sawangjaroen *et al*., 2004).

In Thai traditional medicine, *Piper sarmentosum* Roxb. was used as a carminative, an expectorant, and used to relieve the severity of traumatic injury (Pongboonrod, 1976). In the Malay and Indonesian Archipalago (Malay Peninsula), the boiled leaves and roots of this plant are used for the treatment of toothache, coughing (Muhammad and Mustafa, 1994), fungoid dermatitis on the feet, asthma, pleurisy, relief of influenza and rheumatism (Perry, 1981).

Several kinds of medicinal plants in Thailand were significantly shown to possess the analgesic, anti-inflammatory and antipyretic activities in various experimental animal models, for examples, *Premna herbacea* (Karw-Yen-Nueun) roots (Narayanan *et al*., 1999), *Vernonia cinerea* (Yaa-La-Orgn) leaves (Iwalewa *et al.*, 2003), *Aegle marmelos* (Bua-Tuum) leaves (Veerapan *et al.*, 2004), *Tabernaemontana pandacaqui* (Pud-Fa-Rung) stems (Taesotikul *et al.*, 2002), *Nigella sativa* seeds (Ma-Led-Tuen-Dum) (Al-Ghamdi, 2001) and *Bauhinia racemosa* (Puk-Seuw) stem barks (Gupta *et al.*, 2005).

In the present study, *Piper sarmentosum* Roxb. leaves was selected to examine for its analgesic, anti-inflammatory and antipyretic activities because it is commonly used to cure muscle pain, toothache, relief of influenza and rheumatism in Thai traditional medicine and other countries. Therefore, it might be of great value to evaluate its effects on analgesic, anti-inflammatory and antipyretic activities in experimental animals.