

# CHAPTER I

## INTRODUCTION

### Background and problems

*Lagerstroemia loudonii* (Lythraceae) is a tropical plant mainly distributed in the northern part of Thailand. This genus has 18 species found in mixed forest. (Smitinand, 2001) Some species are used for a local Thai herbal medicine such as *L. floribunda* and *L. Loudonii* barks using for diarrhea treatment and *L. speciosa* leaf using for diuretic and diabetes treatment. Several studies have been investigated pharmaceutical activity of *L. speciosa*. The results showed that *L. speciosa* could control the level of total hepatic lipid contents in genetically diabetic mice (type II) (Suzuki, et al., 1999), reduce blood pressure, lower blood glucose levels, antiviral, antifungal, antibacterial, anticancer (Punyaprabhasara, 2000) and antidiabetic activities in humans (Judy, et al., 2003). Boonphong reported that dichloromethane and methanol extracts from *L. loudonii* had antioxidant activity, anti-TB and anti-malarial activities. Especially the dichloromethane extract from *L. loudonii* fruit had the anti-TB (MIC 100  $\mu\text{g}/\text{mL}$ ) and the anti-malarial activity ( $\text{EC}_{50}$  2.20  $\mu\text{g}/\text{mL}$ ) which were more effective than the methanol extract from the same part of plant (Boonphong, et al., 2003). The isolated compounds of the methanol extract and dichloromethane extracts from flowers of *L. loudonii* are ellagitannins, which has high antioxidant activities (DPPH free radical scavenging assay) (Malaisree, et al., 2006). The preliminary tests of four species of the genus *Lagerstroemia* by Prasitpan, et al. showed that there were only trace amount of alkaloids in the leaf of *L. speciosa*, *L. macrocarpa*, *L. loudonii*, *L. duperreana* and in the bark of *L. duperreana*. Flavonoids had not been found in the leaf and the bark of *L. duperreana*. Trace amounts of flavonoids were found in the leaf of *L. speciosa* but large amounts were discovered in the leaves of *L. macrocarpa* and *L. loudonii*. In addition steroids were found in all leaf and bark samples. (Prasitpan, et al., 1988)

However, the study on the chemical constituents of *L. loudonii* fruit extracts has never been reported yet. In this work, the compounds from *L. loudonii* fruit were extracted and isolated by column chromatography. The identification of the chemical structure of isolated compounds were done by spectroscopic techniques.

### **Objectives**

1. To extract chemical constituents of *L. loudonii* fruit with dichloromethane
2. To purify chemical constituents by column chromatography
3. To identify the chemical structure of isolated constituents by spectroscopic techniques

### **Significance of the study**

In previous research, the dichloromethane extract from *L. Loudonii* fruit had the anti-TB and the anti-malaria activities (Boonphong, et al., 2003). In this work, the chemical compounds from *L. loudonii* fruit will be investigated using solvent extraction and column chromatography. The chemical structure of isolated compounds will be identified by spectroscopic techniques.

### **Scope of the study**

Extraction and isolation of chemical constituents from dichloromethane extract of *L. loudonii* fruit by column chromatography and identification of the chemical structure of isolated compounds by spectroscopic techniques.