

Chapter 1

Introduction

1.1 General introduction

With the emergence of new diseases and the failure of treatment with modern drugs, people have begun to look for more options in their health care.

Today such plants and their preparations are becoming more and more popular again as holistic approaches while alternative concepts are increasingly accepted in the medical world. Soaring demand for medicinal plants, 'herbal' preparations or phyto-pharmaceuticals has caused the rapid growth of the herbal pharmaceutical industry worldwide. Based on a long European tradition and classic 'Western' herbs this industry is increasingly influenced by ayurvedic and traditional Chinese medicines. In Thailand, the use of herbal medicine has long been regarded. Medicinal plants have played an important role in the medical system of Thai people in the past. They were used in intervention for several diseases for a long time as evident by the existence several Thai traditional medicine textbooks.

Recently, there has been considerable interest in the nutraceutical industry and in preventive medicine in the quest for natural antioxidants from plant materials. Various phytochemical components, such as flavonoids, phenylpropanoids and phenolic acids, are known to be responsible for the antioxidant capacity of fruits, vegetables and spices. Consumers are now including phytonutrients in their diet, in the belief that antioxidant compounds may reduce the incidence of cancer,

cardiovascular disease, arthritis, and aging in general, which are correlated with the damaging effects of uncontrolled free radical production.

An expanding market and the consumers' need for quality control of herbal products, attempts are being made by industry leaders and regulatory agencies to define a system of compliance with certain standards concerning the claimed biological activity of a preparation as a function of its chemical composition. The herbs and herbal preparations are of extremely complex nature and, therefore, rather difficult to characterize.

Standardized manufacturing procedures and suitable analytical tools are required to establish the necessary framework. Among those tools, separation technique such as high performance liquid chromatography (HPLC), the most widely used technique to establish reference fingerprints of herbs, plays an important role, by which raw materials can be evaluated and finished products can be assayed.

1.2 Objectives

This study was focused on the isolation of compounds and the screening of their antioxidant activity of the ethanolic extract from rhizome of *Boesenbergia pandurata*. The usefulness of liquid chromatography methods was investigated in the separation of constituents. The antioxidant activity of *B. pandurata* rhizome extracts was measured in order to verify the traditional uses of this ethnomedical plant. The chromatographic patterns are used for qualitative and quantitative analysis.

The specific aims of this study were:

- to investigate the use of liquid chromatographic methods in separation of plant constituents and to determine chemical structures of the isolated compounds by spectroscopic method.
- to study the antioxidant activity of ethanolic extract and its components from *B. pandurata* rhizome by a model system of linoleic acid assay and by measuring their DPPH radical scavenging activity.
- to evaluate the use of HPLC as an analytical technique for compounds and as a rapid method for screening of compounds presented in the plant extracts.