

CHAPTER 1

Introduction

In many countries, traditional medicines play an important role in health care promotion and treatment. Thai traditional medicine (TTM) is the own system of traditional medicine in Thailand. TTM knowledge was gradually developed and passed on from generation to generation. Herbal medicines also used for the treatment of various symptoms and diseases and health promotion in TTM. Folk wisdom in traditional treatment and herbal medicines are valuable knowledge that should be sustainable conserved. Ethnopharmacology and ethnobotany are one of the pharmaceutical research tools in plant selection process for drug development.

1.1 Ethnobotany of *Combretum* species

Many species of the Combretaceous plants are used medicinally in several continents in the world. Traditional healers in Eastern and Southern Africa have used *Combretum* species for many applications, including the treatment of abdominal disorders, backache, bacterial infections, bilharziasis, cancer, chest coughs, cleansing the urinary system, colds, conjunctivitis, constipation, diarrhoea, dysentery, dysmenorrhoea, earache, fever, gastric ulcers, general weakness, gonorrhoea, headaches, heart diseases, hookworm, hypertension, jaundice, leprosy, nosebleeds, pneumonia, skin diseases, sore throats, stomach and gastric problems, swelling caused by mumps, syphilis and toothache [Banskota, 2003 ; Eloff, 2008].

The seeds, leaves, and stem bark of *Combretum quadrangulare* Kurz are used in Vietnamese and Thai traditional medicine as antihepatitis, antipyretic, antidysenteric and anthelmintic agent [Banskota, 2003]. The root of the plant had been used for treatment of abscesses, gonorrhoea and as an anthelmintic [Banskota, 2003]. Many of these indications are related to treating infections.

Of those studied of the *Combretum* species, mostly Africa and some in Vietnam and Japan, they reported various biological activities and isolated chemical constituents, such as *C. erythrophyllum* (Burch.) Sond. leaves [Eloff, 1999 ; Eloff, 2001; Martini, 2004 ; Martini, 1998], *C. woodii* Dummer leaves [Eloff, 2005a ; 2005b], *C. padoides* Engl. & Diels leaves [Angeh, 2007], *C. molle* R.Br. ex G. Don leaves, roots and stem bark [Fyhrquist, 2002 ; Geyid, 2005 ; Mamidou Kone, 2007 ; Steenkamp, 2007], *C. fragrans* F. Hoffm. roots, *C. psidioides* Welw. roots, *C. zeyheri* Sond. roots [Fyhrquist, 2002], *C. imberbe* Engl. & Diels. leaves [Keterere, 2003 ; Rogers, 1988b], *C. apiculatum* Sond. leaves [McGaw, 2000], *C. glandifolium* [Rahman, 2008], *C. fruticosum* (Leofl.) Stuntz. Leaves [Smith, 2000], *C. micranthum* G. Don leaves, root bark and stem bark [Akeem, 1012 ; Elegami, 2007 ; Osonwa, 2012 ; Udoh, 2012], *C. adenogonium* Steud ex A. Rich. leaves *C. glutinosum* Perr. ex DC. leaves and stem bark [Elegami, 2007 ; Yahaya, 2012], *C. aculeatum* Vent. roots, *Combretum* sp. *Aff. obovatum* leaves [Elegami, 2007], *C. adenogonium* Steud ex A. Rich. leaves, stem bark and roots [Maregesi, 2007], *C. niororense* Aubrev. ex key leaves [Coulidiati, 2009], *C. hartmannianum* Schweinf. leaves and roots [Eldeen, 2007], *C. caffrum* Kuntze bark [Masika, 2002], *C. pincianum* Hook leaves [Adejuwon, 2011 ; Kanwal, 2011] and *C. quadrangulare* Kurz leaves, flowers and seeds [Adnyana, 2000a ; 2000b ; 2001a ; 2001b ; Banskota, 1998 ; 2000a ; 2000b ; 2003 ; Castledol, 1985 ; Ganzera, 1998].

In Thailand, there are some reports on the studies of *C. quadrangulare* Kurz : anthelmintic activity from seeds [Euswas, 1988 ; Pipitgool, 1987], lectin activity from seeds [Wongkham, 1995] and antibacterial activity from roots and seeds [Nantachit, 2006 ; Wungchinda, 1979], pharmacognostic study from seeds [Lengwahasatit, 1986 ; Somanabandhu, 1984] and toxicity from seeds [Nakornchai, 1987 ; 1994]. And cytotoxicity from the stem of *C. griffitii* Heur. & M.A. [Moosophon, 2001].

1.2 Principle

From the literature reviews of the genus *Combretum*, there are many reports on antimicrobial activity. Moreover, in our preliminary studies also revealed antimicrobial activity in the crude extracts from *Combretum* spp. As results, it is possible that the *Combretum* species are good sources of antibacterial agents. Natural antimicrobial agents are one of the alternative way to solve the problem of antibiotic resistance.

Today, antibiotic resistance is the most important problem of medication in Thailand and the rest of the world. There is no report about antibacterial activity of *Combretum* species leaves in Thailand and the studies from leaves can conserve heredity of the plants. This investigation may be useful for research and development in microbial infection. In this research, the survey of ethnobotany on *Combretum* spp. in the northern Thailand was performed. Then the screening of the potential sources of bioactive substances for medicinal use in future developments was accessed under ethnobotanical studies and biological activities. The potential medicinal plant was selected to isolated and identified the chemical compositions and bioactive compound(s).

1.3 Research Aims

The aims of this thesis are put forwards :

- 1.3.1 To isolate the pure chemical constituents from the leaves extract of some species of *Combretum* in Thailand.
- 1.3.2 To determine the antibacterial activity of the leaves extract and pure chemical constituents of some *Combretum* species in Thailand.

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
Copyright© by Chiang Mai University
All rights reserved