



CHAPTER I

INTRODUCTION

The growing interest in traditional medicine today has created a need for basic scientific research into this vast field. Various scientific disciplines such as ethnobotany, taxonomy, phytochemistry and pharmacology are emerging as a result of this need. Of these disciplines, phyto-pharmacy deals specifically with the remedies traditionally employed by various cultures. Interest in these remedies, mainly crude drugs derived from medicinal plants, is not new. It has been said that "one only needs to open the pages of any standard textbook of phytopharmaceutical to be impressed by the fact that virtually every chemical class of drug includes a natural product prototype that exhibits the classical effects of the biological category in question; most of them are plant-derived "(1)

There are a number of factors that in recent years have contributed to the growing interest in research into this field, such as the rapid advances in phytochemistry, a growing number of ethnobotanical studies, a general upsurge of interest on renewable resources and biotechnology, as well as the growth of phytotherapy.

" Cancer " one of the most serious malady of mankind is now facing to our public health service system. Drugs currently available to treat cancer or various tumors all have undesirable side-effects. Thus, it is apparent that new and less toxic anticancer agents are needed.

In answer to this need, this study was undertaken to search for new anticancer agents in higher plants. The goal of this particular investigation was to find plant extracts which possessed significant cytotoxic activity and which could be studied further to find useful anticancer principles or novel structure(s) to serve as models for new synthetic structures.

Magnoliaceae, a small family which attracts our attention to focus on preliminary cytotoxic bioassay. Members of this family such as *Michelia* spp. have been used by indigenous people in the treatment of cancer. For example, *Michelia champaca* has been used in India for the treatment of abdominal tumors and *Michelia hypoleuca* and *Michelia officinalis* for carcinomatous sores and leukemia respectively, in China. Experimentally *Michelia grandiflora*, *Michelia compressa* and *Michelia kobus* have demonstrated anticancer activity in various tumor systems (2).

Four species of *Michelia* and *Paramichelia* collected in Thailand have been subjected to cytotoxic screening and exhibited strong positive effect. One of the most effective result is *Paramichelia baillonii* stem bark which has been chosen to investigate in this present work.

The genus *Paramichelia* Hu in the family Magnoliaceae has three species [*P. braianensis* (Gagnep.) Dandy, *P. scortechinii* (King) Dandy and *P. baillonii* (Pierre) Hu] (3, 4) distributed in south and south-east Asia (5). This genus is very similar to that of *Michelia* in both external features and ethnomedical properties.

Paramichelia baillonii (Pierre) Hu [synonymous with *Magnolia baillonii* Pierre, *Michelia baillonii* (Pierre) Fin and Gagnep., *Aromadendron spongocarpum* (king) Craib. and *Aromadendron baillonii* (Pierre) Craib.] is the only species found in northern Thailand and is known in local names as "champi pa" (จ่าป่า), "chumpi" (จ่า) (Northern) and "champa pa" (จ่าป่า) (South-eastern) (6,7).

This species is usually scattered in most deciduous and dry-evergreen forests and distributed through east India, Burma and Indochina. It is characterized as a large tree, to 40 m high; terminal bud slender, elongate, silky; leaves membranous, elliptic-oblong to rhomboidal, 15-22 by

5.5-8 cm; apex acute or acuminate; base cuneate or subrounded; lateral veins 10-15 pairs; glabrous above except the midrip which is covered with adpressed hairs; petiole 2.5-3.5 cm long, scarred below the middle; flower-buds long-ellipsoid, 2-2.5 by 0.5-0.6 cm; peduncle 1-1.2 cm long; spatheaceous bract deltoid, 2-2.5 cm long; tepals creamy-white, about 15 in number, outer ones narrowly lanceolate, 2.2 by 0.5 cm; inner ones linear, 2 by 0.2 cm; stamens 7-8 mm long; connective produced above, pointed, 2 mm long; gynoecium densely covered with greyish short hairs, on a stalk 5-6 mm long; fruiting syncarp oblong-ovoid, 7 by 4.5 cm; seeds bright red (6).

The bitter bark of this plant has been used by the natives as a stimulant, febrifuge (9) and as a substitute for champaca (*Michelia champaca* L.) bark. A decoction of the bark of *Michelia champaca* has been used as a febrifuge, as a protective medicine for mothers after child birth (8, 9) and in India for the treatment of abdominal tumors (2). Neither phytochemical nor pharmacological studies on any part of *Paramichelia baillonii* have been reported previously. The present study was undertaken in order to contribute our knowledge of the constituents of this medicinally interesting genus. The investigation has led to the structural elucidation of four constituents of the bark of this particular species and evaluation of the activities of isolated compounds on KB cell culture assay.



Figure 1.1 *Paramichelia baillonii*(Pierre) Hu

หอสมุดกลาง สถาบันวิทยบริการ
จุฬาลงกรณ์มหาวิทยาลัย



Figure 1.2 *Paramichelia baillonii*(Pierre) Hu bark

ศูนย์
จุฬาลงกรณ์มหาวิทยาลัย



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จุฬาลงกรณ์มหาวิทยาลัย

Figure 1.3 *Paramichelia baillonii*(Pierre) Hu leaves