CHAPTER I

INTRODUCTION

The Kwao Krua plants were referred to plants with twinning stems and have been long-term popular consumed as traditional remedies for rejuvenating purposes in Thailand. The plants were recognized according to the color of the tubers or roots. *Pueraria mirifica* was named the white Kwao Krua plant as the tuber comprised white meat. The plant was found to contain high amount of phytoestrogens with potent estrogenic effects (Cain, 1960; Chansakaow *et al.*, 2000[a]). The crude powder was confirmed to be an effective alternative treatment for menopausal symptoms (Muangman and Cherdshewasart, 2001) with negative results of toxicity tests in animals and humans (Cherdshewasart, 2003). The cellular action of the plant extract needed metabolic activation (Lee *et al.*, 2002) with anti-proliferation effects to HeLa cells and MCF-7 (Cherdshewasart, Cheewasopit and Picha, 2004[a,b]). *Butea superba* was named the red Kwao Krua plant as the bark comprised sticky red sap. The active ingredients of the tubers were found to be flavonoid and flavonoid glycoside with cAMP phosphodiesterase inhibitor activity (Roengsumran *et al.*, 2000). Crude powder derived from tubers showed effective treatment for erectile dysfunction with possible androgenic effect (Cherdshewasart and Nimsakul, 2003). *Mucuna collettii* was named the black Kwao Krua plant as every parts of the tree including roots, stems, leaves, flowers and seeds became black if cut or dried. The chemical content of the roots were Kaempferol, Quercetin and Hopeaphenol (Sookkongwaree *et al.*, 2006 in preparation).

Recently, Kwao Krua plants were becoming popular in Asia with the presence of a vast variety of dietary supplement and cosmetic products. The plant medicines must be eliminated by restructuring the requirements for proof of efficacy and concentrating on safety, and by removing the need for extensive analyses of chemically complex natural product medicines. The OECD guidelines (OECD 471, 1997) recommended genotoxicity test to evaluate for the safety as well as the potential to develop products from the plant materials.

According to a large-scale survey on the distribution and diversity of the Kwao Krua plants since 1998, at different locations are confirmed to be exist habitat of the plants (Cherdshewasart, Subtang and Dahlan, 2006 in preparation). The investigation

found that *P. mirifica*, *B. Superba* and *M. collettii* were collected from different locations. *P. mirifica* exhibited highly variation of isoflavone contents (Cherdshewasart, Kitsamai and Malaivijitnond, 2006 in preparation), antioxidant activities (Sutjit, 2003) and anti-proliferation effects to MCF-7 (Trisap, 2003). This study will focus on evaluation of mutagenicity and antimutagenicity as regards their pharmacological properties, toxicity, dosage and period of treatment, visualizing safer utilization. The plants with strong antimutagenic activities are also interesting as they might be good sources of material to be developed into anti-cancer products.

Aim of the studies are as follows;

- To evaluate and rank the mutagenic activity by using Ames Test of Kwao Krua plant population, *P. mirifica* collected from 28 provinces, *B. superba* collected from 24 provinces *M. collettii* collected from 4 provinces of Thailand.
- To evaluate and rank the antimutagenic activity of Kwao Krua plant population by using Ames Test of Kwao Krua plant population, *P. mirifica* collected from 28 provinces, *B. superba* collected from 24 provinces *M. collettii* collected from 4 provinces of Thailand.