

CHAPTER I

INTRODUCTION

Pueraria mirifica (*P. mirifica*) is a Thai indigenous herb with a long history of domestic consumption as rejuvenating remedies in both males and females (Suntara, 1931). There was a study to use *P. mirifica* for contraception in animals (Samitasiri *et al.*, 1986). *P. mirifica* was interested by researchers and consumers because it contains estrogenic activities (Kerr, 1932; Schoeller *et al.*, 1940; Lee *et al.*, 2002; Muangman and Cherdshewasart, 2001). *Butea superba* (*B. superba*) is a Thai herb with a consumption history of promotion of male potency. The main chemical constituents were found to be flavonoid and flavonoid glycoside with cyclic AMP phosphodiesterase inhibitor activity (Roengsumran *et al.*, 2000). *Mucuna collettii* (*M. collettii*) has chemical constituents as kaempferol, quercetin and hopeaphenol with strong cyclic AMP phosphodiesterase inhibitor activity (Roengsumran *et al.*, 2001). The applications of Kwao Krua plants for human consumption have to rely on the effective dose and adverse effect as well as mutagenic risk. Besides, *B. superba* and *M. collettii* were also interested for commercialized product development.

In present study, *P. mirifica*, *B. superba* and *M. collettii* from each source in Thailand were investigated for antioxidant activity. The *P. mirifica*, *B. superba* and *M. collettii*, with highest antioxidant activity, will be chosen for study further, both the mutagenicity and antimutagenicity in a model bacterial system (Ames' test) and genotoxicity effect (mutagenicity) in a model bone marrow of mammalian system (micronucleus test) comparing with *P. lobata* (a herb in China). *P. lobata* was classified in the same family as *P. mirifica*, but the capacity and a kind of phytochemicals of *P. lobata* are different (Kaufman, 1997). The three plants are rapidly interest by global consumers for both oral and topical products. We therefore set up antioxidant test, Ames' test and micronuclei test of the three plant extracts in comparison with one of the well- known Chinese herb, Kudzu (*P. lobata*). The results will enable us to evaluate for the mutagenic risks of the three plant extracts.

Aims of the studies are as follows:

1. Evaluate for the antioxidant activity by DPPH assay in Kwao Krua plant population: *P. mirifica*, *B. superba* and *M. collettii* with *P. lobata* extracts.
2. Evaluate for mutagenicity and antimutagenicity by Ames' test in candidate plants: *P. mirifica*, *B. superba* and *M. collettii* with *P. lobata* extracts.
3. Evaluate for genotoxic by micronucleus test in candidate plants: *P. mirifica*, *B. superba* and *M. collettii* with *P. lobata* extracts.



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