CHAPTER I

INTRODUCTION

Kwao krua is a leguminous plant that it has been used for centuries as a traditional Thai herbal medicine. Kwao krua is believed to enhance longevity and is said to have rejuvenating and aphrodisiac properties. The use of white strain (*Pueraria mirifica* Airy shaw and Suvatabandhu) for breast enlargement has become a major focal point for modern research of Kwao krua. The red strain (*Butea superba* Roxb.), with its purposed aphrodisiac potency, is little known to the scientific world. Recently, *Butea superba* has a renewed interest, after a herbal specialist claimed that it may cure impotence (Cherdshewasart, 2541). It believed that *Butea superba* promotes penile blood flow and therefore aids erection (Roengsamaran, 2000). The usage dosage of *Butea superba* is one- half of ratti (Arus precatius). This herb exhibits some chemical closely related to that of the *Pueraria mirifica* herb, but some chemical is far more different (Anusansunthorn, 1931).

The bioactivity of each constituent of *Butea superba* has been tested, especially the inhibitory effect towards cAMP phosphodiesterase, which has an effect on controlling a wide number of diseases. In result from testing the bioactivity of two key elements of *Butea superba*, flavonoid and flavonoid glycoside, it was found that both of these compounds were effective in inhibiting cAMP phosphodiesterase (Roengsamran *et al.*, 2000). Furthermore, substances that had an effect on inhibiting cAMP phosphodiesterase also take part in controlling numerous severe diseases including

diabetes, hypertension, asthma, hepatomas and possibly cancer. In addition, substances inhibited phosphodiesterase also had an effect on controlling platelet-aggregation inhibition. The attributes of this herb increasing in male sexual performance are most probably due to the inhibiting of cAMP phosphodiesterase. It has been concluded that the herb, *Butea superba* is beneficial for human health. This herb may also help control certain severe diseases and be capable of enhancing the sexual performance in men.

In 1999, Manosroi *et al.* investigated the acute toxicity of *Butea superba* in rats and reported that the LD50 was 20 g/kg. Extensive research of its sub- chronic toxicity by Manosroi *et al.* (2000) revealed that *Butea superba* had no effect on liver and kidney function.

In 2000, Bhuntaku investigated the subchronic effect of *Butea superba* on reproductive systems in male rats at doses of 0, 10, 100, 150 and 200 mg/kg.BW/day for 90 days. The results showed that at the dosage of 150 mg/kg.BW/day, LH levels showed a trend of decreasing, and testosterone levels were significantly lower than that of the control groups. However at the dosage of 200 mg/kg.BW/day, testosterone levels showed only a trend of decreasing. In the same year, Posachai did the same research but in the females. The results showed that the weights of ovary and uterus in the *Butea superba* treated groups were not difference from the control group.

The results seem to support the hypothesis that *Butea superba* promotes the male sexual activity. However, there have been no intensive data on serum levels of sex steroid hormones and gonadotropins following administration of *Butea superba* in both sexes of rats. The present experiments are therefore designed to evaluate the effect of

Butea superba on serum sex hormone levels and reproductive organs in both of adult female and male rats. The histology of the reproductive organs in these animals has been also determined, to find out the correlation of changes with the hormonal levels.

The dosages of the powder suspension of *Butea superba* used in this study were calculated from the treatment dosages and results of the study of Bhuntaku (2,000), as previously described. The dosage of *Butea superba* was started from 10 mg/kg.BW/day and step up by 5 folds, that is, 10, 50 and 250 mg/kg.BW/day.

From the reasons that *Butea superba* has the effects similar to androgen, in this experimental, we therefore set up the positive control group. In the positive control group, rats were treated with 600 μg/100g.BW/day of testosterone propionate, to ensure its effect on suppression of sex hormone levels and reproductive organs. The previous study revealed that the administration of testosterone propionate at the dose of 125 μg/day in the castrated male rats for 7 days increased testicular and seminal vesicle weight (Feder *et al.*, 1971). The treatment of castrated rats with testosterone propionate also resulted in suppression of both LH and FSH levels to intact levels. Suppression of LH levels to that of intact controls occurred at the dose of 300 μg/100g.BW/day, while FSH levels remained considerably above intact levels at this dose and decreased at the dose of 600 μg/100g.BW/day. Furthermore, there was an increase of epididymis weight in rat treated with 200 μg/day of testosterone propionate for 12 days (Laminat *et al.*, 1978). In the present study, some groups of rats were also castrated before the onset of study to prevent the ambigous effect of the endogenous sex steroid hormones.