

## CHAPTER IV

DISCUSSION

Pharmacognostical study is a useful tool among others for controlling the quality of drug used in pharmacy and medicine. The standard method such as histology or microscopy to detect adulteration and substitution of drug was developed in order to make accurate and correct identification. Numerical values such as palisade ratio, vein-islet number, veinlet termination number, stomatal index and stomatal number, were proved to be useful in identifying plant of close-related plant besides the morphology and chemical constituents.

Pueraria mirifica Airy Shaw et Suvatabandhu ("Guao Krüa") and Butea superba Roxb. ("Guao Daeng" also sold under the name of "Guao Krüa") are both climbing plants, but Butea superba Roxb. is more woody, leaves are larger and thicker, root is longer than that of Pueraria mirifica. Starch grains in the tuberous roots of Butea superba are larger than those of Pueraria mirifica, and the lamellae of the starch grains of Butea superba can be seen almost distinctly. There is no remarkable error in the constant values in determination of palisade ratio, vein-islet number, veinlet termination number, stomatal number and stomatal index obtained in this

study. From 30 duplications, only few of them are out of range. The range of error in microscopic study especially in stomatal index and stomatal number of Pueraria mirifica, is rather wide because it is not quite easy to find a certain cell without interference of the epidermal trichomes.

Differences of all the constant values obtained in two plant species of the same local name "Guao Krüa" in this study are quite significant that either one can be applied as a means to differentiate one from the other. In order to obtain exact identity, two dimensional paper chromatograms were taken to compare the chromatographic spots of chemical constituents. The distribution of the chemical compounds with solvent systems mentioned were located by  $R_f$  values, colours in day light, colours under ultraviolet light and with or without ammonia vapour, chromogenic reagents. The cyclic sequence of the solar spectrum was used in order to reduce interpretation error of colours. All data about the spots were coded in the decadic numerical system along with informations on source of the plant materials, treatments and chromogenic reagents,  $R_f$  values in the first and second solvent systems and colours produced with chromogenic reagents.

Although these two plants (Pueraria mirifica Airy Shaw et Suvatabandhu and Butea superba Roxb.) can give the same physiological effect of rejuvenation. But on point of

mammary glands stimulation, only the tuberous root of Pueraria mirifica Airy Shaw et Suvatabandhu is effective. The chromatographic pattern of these two species are established. Only few of the spots situated at the same location, among them the spot treated with steroid detection reagent (Liebermann-Burchardt's reagent) is an interesting spot because this steroid containing spot of the two plants are at the same location. The most interesting miroestrol spot with the mammary glands enlargement activity cannot be identified because no authentic miroestrol is available.

It is unfortunate that the Pueraria mirifica Airy Shaw et Suvatabandhu flower, which is one of the most useful part for plant identification cannot be obtained after waiting for more than four years. This plant rarely sets flower, so far there has been only once on the record of flowering of this plant.