

CHAPTER 1

INTRODUCTION

Zingiberaceae Lindl. is a medium-size family, comprises around 50 genera with 1,300 species. The family is chiefly distributed in the tropics and its centre in South and Southeast Asia.

It was previously divided into four tribes, *Alpinieae*, *Globeae*, *Hedychieae* and *Zingibereae* based on morphological characters. Recently, Kress et al. (2002) proposed a new system based on molecular phylogeny. The new system comprises four subfamilies and six tribes: Siphonochiloideae (Siphonochileae), Tamijioideae (Tamijieae), Alpinioideae (Alpinieae & Rideliaceae), and Zingiberoideae (Globeae & Zingibereae).

The genus *Curcuma* L. was formerly classified to the tribe *Hedychieae* Petersen (1889), but now belongs to tribe *Zingibereae* Meisn. of subfamily *Zingiberoideae* Hassk. in Kress' system. This genus was first established by Linnaeus in his "Species Plantarum" in 1753 with two species. The first one is *C. rotunda* L. which is now considered to belong to *Boesenbergia rotunda* (L.) Mansf. The second one, *C. longa* L., was selected as the type of the genus. *Curcuma* is conserved for this genus.

This genus was divided into subgenera and sections by several taxonomists based on different criteria. Baker (1892) divided this genus into three sections i.e. *Exantha*, *Mesantha* and *Hitcheniopsis* based on differences in position of inflorescence, flowering period and bract character. Schumann (1904) used the similar criterias to separate *Curcuma* into two subgenera: *Eucurcuma* and *Hitcheniopsis* based on bract and anther spur characteristic. Subgenus *Eucurcuma* was subdivided into two sections: *Exantha* and *Mesantha* based on position of the inflorescence. Valeton (1918) studied and divided this genus into 2 subgenera: *Eucurcuma* and *Paracurcuma* on the basis of leaf shape and ligule. He also mentioned that some species should be separated from *Curcuma*. These infra-generic classifications are still problematic.

The studies by Kress et al. (2002) and Ngamriabsakul et al. (2004) showed that *Curcuma* is not monophyletic, and four genera, *Hitchenia*, *Paracautleya*,

Smithatris and *Stahlianthus*, are associated in the *Curcuma* clade. Unfortunately, few species of *Curcuma* were included in these analyses. The relationships of these five genera are still unsolved.

Many species of *Curcuma* are used for different purposes. *C. longa* L. is well known as spice, dye and medicinal plant for long time. Some are used as medicinal plant, for example, *C. comosa* Roxb., *C. zanthorrhiza* Roxb. and *C. zedoaria* (Christm.) Rosc. *C. aeruginosa* Roxb. and *C. leucorrhiza* Roxb. are important starch plants in India and Bangladesh. Young inflorescences of *C. angustifolia* Roxb. and *C. singularis* Gagnep. as well as rhizome of *C. manga* Val. are vegetable plants in Thailand. Some other species become important ornamental plants, for example, *C. alismatifolia* Gagnep., *C. parviflora* Wall., *C. roscoeana* Wall. and *C. sparganifolia* Gagnep.

There are few taxonomic studies of *Curcuma* in Thailand. Until now, the number of species is uncertain. Species characteristic is unclear due to the complexity of morphology.

Objectives:

1. To revise the genus *Curcuma* L. in Thailand.
2. To study the relationship between species and among related genera within the same tribe.