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, Globbeae, 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 & Ridleieae), 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. leucorhiza 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.