Panarat Charoenchai 2014: Taxonomy of the Subtribe Ruelliinae (Acanthaceae) in Thailand and Its Biological Activities. Doctor of Philosophy (Botany), Major Field: Botany, Department of Botany. Thesis Advisor: Associate Professor Srunya Vajrodaya, Dr.rer.nat. 192 pages.

A taxonomic studies of plants in the subtribe Ruellinae, tribe Ruellieae, Family Acanthaceae in Thailand, based on classification system of Scotland and Vollesen (2000) and Mallbery (1997) were conducted. The herbarium specimens were examined together with the plant collection from the natural habitats including the ornamental plants. Nine genera, 75 species, 78 taxa are enumerated and listed, i.e. *Clarkesia* (1 species), *Diceratotheca* (1 species), *Dyschoriste* (1 species), *Eranthemum* (6 species), *Hygrophila* (6 species), *Phaulopsis* (1 species), *Ruellia* (8 species), *Sanchezia* (1 species), *Strobilanthes* (49 species, 52 taxa) and *Hemigraphis repanda* (L.) Hallier f. (unplaced species in Strobilanthes). Three species are new transfers from genus *Hemigraphis* i.e. *S. alternata* (Burm. f.) P. Charoenchai, *S. confinis* (Nees) P. Charoenchai, *S. hispidula* (Craib) P. Charoenchai (unpublished). The distinguished characters of this subtribe are cystoliths, leftcontorted aestivation, filaments curtain and jaculators in the capsules.

Crude extracts (CH₂Cl₂ and MeOH) of some plants were screened for their antiplasmodial, cytotoxic, antioxidant and radical scavenging activities. These plants i.e. *Eranthemum tetragonum*, *Hygrophila ringens*, *Phaulopsis dorsiflora*, *Ruellia kerrii*, *S. auriculata*, *S. corrugata*, *S. cusia*, *S. dimorphotricha* var. *rex*, *S. karensium*, *S. maxwellii*, *S. pateriformis*, and *S. brandisii*. CH₂Cl₂ extracts of *S. corrugata*,

S. cusia, S. maxwellii, S. pateriformis and S. brandisii showed antiplasmodial activity with the IC_{50} values of 10-100 µg/mL. CH_2Cl_2 extracts of plants i.e. H. ringens,

P. dorsiflora, *S. corrugata*, and *S. maxwellii* showed cytotoxic activity with the IC₅₀ values of 3.5-46.0 µg/mL. MeOH extracts (at 100 µg/mL) of *R. kerrii* and *S. auriculata* could effectively scavenge DPPH free radicals (82-83 % inhibition) and superoxide anion radicals (79 and 88 % inhibition). In the ORAC antioxidant assay, MeOH extracts of *R. kerrii*, and *S. auriculata* exhibited the activity with the ORAC units of 3.1-3.9.

Key words

Ruelliinae; Acanthaceae; Antiplasmodial activity; Cytotoxic activity; Radical scavenging; Antioxidant activity; Cancer chemoprevention

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