Comparative study of microscopic, phytochemical, and thin layer chromatography analyses of *Curcuma longa* L. and *Zingiber cassumunar* Roxb. rhizomes of Cambodia

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**KEYWORDS**: *Curcuma longa* L., *Zingiber cassumunar* Roxb., Microscopic, Phytochemical, TLC

**INTRODUCTION**
*Curcuma longa* L. (Local name: *Romiet* or *Lmiet*) and *Zingiber cassumunar* Roxb. (Local name: *Ponlei*) rhizomes have been widely used by the traditional medical practitioners for curing various illnesses such as arthritis, inflammation and muscle problems. In the field of cosmetics, these plants have been used for the improvement of skin health.

**OBJECTIVES**
This study aims at comparing the evaluation of microscopic cellular elements, phytochemicals and thin layer chromatography (TLC) fingerprints between the *Curcuma longa* L. and the *Zingiber cassumunar* Roxb. rhizomes cultivated in Cambodia.

**MATERIALS AND METHODS**
The powder of *Curcuma longa* L. and *Zingiber cassumunar* Roxb. rhizomes were purchased from the local plant drugstore and authenticated by University of Puthisastra (UP)-Herbarium (*C. longa*: UPFPH-210019; *Z. cassumunar*: UPFPH-210033). The powder microscopic study was performed in accordance with the WHO protocol in 1998. The powder of these plants was extracted with methanol by using Ultrasonication-Assisted Extraction (UAE) method. The extracting yields of each plant were subjected to the phytochemical screening by using chemical tests. The TLC analysis of each plant was performed with mobile phase ratio toluene:ethanol (9:1). The TLC layouts were detected by 254-366 nm UV light and 10% of H2SO4 reagent.

**RESULTS**
The powder microscopic studies of *Curcuma longa* L. and *Zingiber cassumunar* Roxb. rhizomes showed that starch granules, vessels, group of fibers, vessels associated with pigment cells, parenchyma and oleo-resin cells were present in both plant rhizomes. The starch granules in *Zingiber cassumunar* Roxb. rhizomes were more abundant than those of *Curcuma longa* L. rhizomes. The phytochemical screening unveiled the positive tests of alkaloids, tannins, steroids, terpenoids, cardiac glycosides, essential oils and resins in both plant rhizomes. The TLC layouts investigated under 254-366 nm UV light and 10% of H2SO4 reagent gave good separation with the mobile phase ratio toluene:ethanol (9:1).

**CONCLUSION**
This study provides the scientific data of cellular elements, phytoconstituents and TLC fingerprints of Cambodian *Curcuma longa* L. and *Zingiber cassumunar* Roxb. These profiles exhibit significant roles in the areas of the plant authentication and new drug isolation.
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