

## **Relationship between metabolites composition and biological activities of *Phyllanthus niruri* extracts prepared by different drying methods and solvents extraction**

### **ABSTRACT**

The study investigated the changes in the metabolite, antioxidant and  $\alpha$ -glucosidase inhibitory activities of *Phyllanthus niruri* after three drying treatments: air, freeze and oven dryings. Water extracts and extracts obtained using different solvent ratios of ethanol and methanol (50, 70, 80 and 100%) were compared. The relationships among the antioxidant,  $\alpha$ -glucosidase inhibitory activity and metabolite levels of the extracts were evaluated using partial least-square analysis (PLS). The solvent selectivity was assessed based on the phytochemical constituents present in the extract and their concentrations quantitatively analyzed using high performance liquid chromatography. The freeze-dried *P. niruri* samples that were extracted with the mixture of ethanol or methanol with low ratio of water showed higher biological activity values compared with the other extracts. The PLS results for the ethanolic with different ratio and water extracts demonstrated that phenolic acids (chlorogenic acid and ellagic acid) and flavonoids were highly linked to strong  $\alpha$ -glucosidase inhibitory and antioxidant activities.

**Keyword:**  $\alpha$ -Glucosidase inhibitory activity; *Phyllanthus niruri*; PLS; TPC; Antioxidant activity