Effects of solvent type on phenolics and flavonoids content and antioxidant activities in two varieties of young ginger (Zingiber officinale Roscoe) extracts

Abstract

The extractive capability of phenolic components from herb material is considerably depended on the type of solvent. In our research three kinds of solvents (methanol, acetone and chloroform) extracts from different parts (leaves, stems and rhizomes) of two Malaysian young ginger varieties (Halia Bara and Halia Bentong) were used to examine the effects of extraction solvent on total phenolics (TP), total flavonoids (TF), quercetin, catechin and rutin content and antioxidant activity [1,1-diphenyl-2-picryl-hydrazyl (DPPH) assay]. Results showed that extraction solvent had significant effects on TP, TF, quercetin, catechin and rutin content and antioxidant activity. The highest content of TP, TF and DPPH scavenging activities were found in methanol extracts. Additionally, High performance liqouid chromatography results shown that methanol had the highest extraction capacity for quercetin, rutin and catechin. Between varieties Halia Bara had high content of TP, TF and antioxidant activities to compare with Halia Bentong. Accumulation and partitioning of TP and TF in both varieties were: leaves > rhizomes > stems in all the three solvent extracts. However, according to the results extraction yield of phenolic compounds is greatly depending on the solvent polarity. With increased in solvent polarity from chloroform to methanol, amount of phenolic compounds and antioxidant activities increased in both varieties. Thus, for routine screening of young ginger varieties with higher antioxidant activity, methanol was recommended to extract phenolic compounds from young ginger.

Keyword: Solvent; TP; TF; DPPH; Zingiber officinale.