Antioxidants content and activity of polyphenol-rich mixtures

ABSTRACT

This study aimed to determine antioxidants content and antioxidant activity of Polyphenol-Rich Mixture (PRM) samples containing garlic, ginger, lemon, apple cider vinegar and honey. Three PRM samples (raw, cooked and commercial) were subjected to Folin-Ciocalteu reagent and aluminium chloride colorimetric assays for determination of Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) respectively. Antioxidant activity was determined based on DPPH free radical scavenging and Ferric Reducing Antioxidant Power (FRAP) assays. TPC and TFC of the three samples were significantly different ($p<0.05$) where cooked and commercial PRM had the highest antioxidants content. Similarly, cooked and commercial PRM showed the lower EC values indicating both samples possess higher antioxidant activity compared to raw PRM. The 50 cooked and commercial PRM also had higher FRAP values which showing a significant difference between the PRM samples ($p<0.05$). Pearson correlation analysis demonstrated high negative correlations between DPPH scavenging activity and total phenolics (TPC and TFC) with $r = -0.855$, $r = -0.829$, respectively. FRAP values of the PRM samples were also positive and highly correlated with TPC and TFC ($r = 0.995$, $r = 0.988$, respectively). This finding clearly indicated that cooked and commercial PRM possess high antioxidants content and antioxidant activity and can be considered as potential natural antioxidant beverages for prevention of chronic diseases.

Keyword: Antioxidant assay; Polyphenol-rich mixture; Allium sativum; Zingiber officinale; Citrus limon; Apple cider vinegar; Honey