Total anti-oxidant capacity, flavonoid, phenolic acid and polyphenol content in ten selected species of Zingiberaceae rhizomes

ABSTRACT

Background: Natural products such as herbs, fruits, spices, beverages, vegetables are becoming more popular among scientific community and consumers because of their potential to arrest the effect of free radicals in human system. This study determined the total antioxidant capacity of ten selected species of Zingiberaceae (Ginger) used as spices and for medicinal purposes in Southeast Asia.

Materials and Methods: Methanol was used as the extraction solvent, 2,2 ï diphenyl -1-picrylhydrazil (DPPH) for free radical scavenging activity and ferric reducing antioxidant power (FRAP) assays. Phenolic compounds were measured using Total flavonoid, Phenolic acid and Polyphenols content assay to evaluate the quality of the antioxidant capacity of the rhizomes and vitamin C as positive control.

Results: The results obtained revealed that Curcuma longa and Zingiber officinale had the highest free radical scavenging capacity of 270.07mg/TE/g DW and 266.95mg/TE/g DW and FRAP assay, Curcuma longa and Zingiber officinale also gave the highest ferric reducing power of 231.73mg/TE/g DW and 176.26mg/TE/g DW respectively. For Phenolic compounds, Curcuma longa and Curcuma xanthorrhiza gave the highest values of flavonoid (741.36mg/NGN/g DW and 220.53mg/NGN/g DW), phenolic acid (42.71mg/GAE/g DW and 22.03mg/GAE/g DW) and polyphenols (39.38mg/GAE/g DW and 38.01mg/GAE/g DW) respectively. Significant and positive linear correlations were found between Total antioxidant capacity and Phenolic compounds (R = 0.65 ï 0.96).

Conclusion: This study provides evidence that extracts of Zingiberaceae (Ginger) rhizomes are a potential source of natural antioxidants and could serve as basis for future drugs and food supplements

Keyword: Zingibearaceae; Antioxidant; Free radical; Oxidative stress; DPPH; Flavonoid; Phenolic acid; Polypheno