

Influence of different extraction solvents on phytochemical content and antioxidant capacity extracted from pulp and flower of dessert and cooking bananas

ABSTRACT

Solubility of antioxidant compounds depends on the type of extraction solvent used. Here, we report total phytochemical content and antioxidant activities of methanolic, ethanolic and distilled water extracts of banana pulp and flower from different banana cultivars. Rastali (AAB) and Berangan (AAA) belong to a dessert banana group, while Tanduk (AAB), Nipah (BBB) and Awak (ABB) belong to a cooking banana group. The total antioxidant activities were analyzed using 2,2-Diphenyl-1-picrylhydrazyl (DPPH) and Ferric Reducing Antioxidant Power (FRAP) assays. The total of phenolics (TPC), flavonoids (TFC) and β -carotene (TBC) were also determined. The DPPH assay showed the methanolic extract of ripe dessert banana pulps, Rastali and Berangan contained the highest antioxidant activities, 91% and 74.15%, respectively. A similar trend was observed from FRAP assay, which showed the methanolic extract of ripe Rastali and Berangan pulps contained the highest antioxidant activities, $1225.52 \pm 6.51 \mu\text{M Fe(II)/g}$ and $1090.42 \pm 20.66 \mu\text{M Fe(II)/g}$, respectively. The highest TPC and TFC were found in the methanolic extract of Berangan flower ($55.91 \pm 1.25 \text{ mg GAE/g FW}$) and ripe Berangan pulp ($1.51 \pm 0.05 \text{ mg RE/g FW}$), respectively. The ripe Berangan pulp and Awak flower showed the highest TBC ($6.685 \pm 0.11 \mu\text{g/g FW}$ and $6.374 \pm 0.26 \mu\text{g/FW}$, respectively). Overall, methanolic extract showed the best capacity to extract the highest antioxidant compounds from dessert bananas, while ethanolic extract has the best ability to extract antioxidant compounds from cooking banana. Thus, respective solvents can be used to extract natural antioxidant compounds from different banana cultivars for human consumption and industrial use.

Keyword: Phytochemical content; Cooking banana; Dessert banana; Antioxidant; Extraction solvents