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Antioxidant capacities and total phenolic content of some Philippines vegetables: Effect of boiling

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High intake of plant foods has been linked to decreased risk of many chronic diseases. In Philippines, various vegetables are cultivated but have not been thoroughly studied in terms of their antioxidant capacities. This work assessed the antioxidant capacity of vegetables commonly grown and consumed in rice-based farms in the country. Twenty-one raw and boiled vegetables were evaluated for their total phenolic content (TPC) using the Folin-Ciocalteu assay. The antioxidant capacities were determined using the 2,2-diphenylpicrylhydrazyl (DPPH) radical scavenging activity and 2,2-azinobis(3-ethylbenzothiazoline-6-sulfonic-acid)-diammonium salt (ABTS) cation-radical scavenging activity techniques. The TPC of the raw vegetables ranged 0.11-31.78 mg gallic acid equivalents/g sample, with the highest values recorded in jute (*Corchorus olitorius*), eggplant (*Solanum melongena*), squash flower (*Cucurbita maxima*), chili (*Capsicum frutescens*), mustard (*Brassica juncea*), Chinese cabbage (*Brassica rapa*) and green pepper (*Capsicum annuum*). DPPH of the raw samples ranged from 1.24-239.32 μmol Trolox equivalents (TE)/g, while ABTS ranged from 2.10-136.84 μmol TE/g. Boiling generally reduced the TPC and antioxidant capacities. Jute, eggplant, water spinach (*Ipomoea aquatica*), green pepper, and ginger (*Zingiber officinale*) consistently displayed the highest antioxidant capacities in both raw and boiled forms as measured by DPPH and ABTS techniques. The TPC of raw and cooked vegetables were highly correlated with their DPPH values ($r=0.931^{**}$ and 0.892^{**} , respectively) and ABTS ($r=0.941^{**}$ and 0.828^{**} , respectively). Increasing the consumption of minimally heated vegetables could help consumers maximize their dietary antioxidant intake.

Biography

Rosaly V Manaois has received her Master's degree in Food Science from Louisiana State University as a Scholar of the Ford Foundation International Fellowship Program. She was a Fellow at the Functional Food Factor Laboratory at the National Food Research Institute, Tsukuba, Ibaraki, Japan in 2014-2015 under the United Nations University-Kirin Fellowship Program. She is currently the Head of the Rice Chemistry and Food Science division of International Rice Research Institute, Philippines. Her research interests include functional foods, rice starch, sensory evaluation, and rice grain quality.

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