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Content and *in vitro* bioaccessibility of β -carotene from two mango fruit varieties

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Among the local mango (*Mangifera indica* L.*)* varieties, "Karuthacolomban" and "Beti Amba" are widely consumed in Sri Lanka. The objective of the present study was to quantitatively analyze pro-vitamin A carotenoids in the varieties, "Karuthacolomban" and 'Beti Amba" which were identified by the horticultural crop research and development institute, Gannoruwa, Kandy, Sri Lanka and to assess their *in vitro* bioaccessibility. A reversed phase HPLC method has been developed for the separation and extraction of carotenoids in crude and saponified extracts from "Karuthacolomban" and "Beti Amba" fruits. All fruits at the uniform ripening stage (i.e., fully ripe) were selected from local market and used for the analysis.

Carotenoids were extracted and identified by using Open Column Chromatography (OCC) and UV Visible absorption spectra (maximum absorption and spectral fine structure). Purity of the identified carotenoids were further confirmed using the HPLC with photo diode array detection (C_{18} column Spherisorb ODS2, 5µm, 4.6mm x 150mm; gradient elution of mobile phase of Methanol, Acetonitrile and 0.05% Triethylamine in Ethylacetate). *In vitro* bioaccessibility of provitamin A carotenoids were analyzed using Gastro Intestinal Tract simulation method .The quantification of those carotenoids were carried out using reverse phase HPLC with external standard.

The HPLC analyses of crude extract of carotenoids of the variety Karuthacolamban highlighted the existence of four main peaks which had UV- Visible spectra similar to those reported for violaxanthin, neoxanthin, β-carotene and α-cryptoxanthin and in variety Beti Amba highlighted the existence of three main peaks which had UV- Visible spectra similar to those reported for violaxanthin, neoxanthin, β-carotene. The variety Karuthacolomban contains 2.7 ±0.3 µg/g (Fresh weight) and the variety Beti Amba contains 2.6 ±0.3 µg/ g (Fresh weight) of β- carotene as the principal pro-vitamin A carotenoid. The amount of *in vitro* bioaccessible.

β -carotene was higher in the Beti Amba variety (29.6%) than Karuthacolomban (24%). Thus, this study has indicated that varietal differences may not exist in the content but in the bioaccessibility of beta-carotene in mango verities examined in this study.

Financial assitance by the International Foundation for Science, Stockholm, Sweden and Organisation for the Prohibition of Chemical Weapons (OPCW), THE HAGUE, Netherlands, through a grant to Dr. U.G Chandrika. (Research grants No: E/3655-1) and National Research Council Grant 2005: No. 05-36 is acknowledged.

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