

Title Effects of variety, ripening condition and ripening stage on the quality of sulphite-free dried mango slices

Author Busarakorn Mahayothee, Sybille Neidhart, Reinhold Carle and Werner Mühlbauer

Citation European Food Research and Technology 225 (5-6): 723-732. 2007.

Keywords β -Carotene; Calcium carbide; Drying; Ethephon; *Mangifera indica* L.; Postharvest ripening; Sensory quality

Abstract

The influence of cultivar and fruit ripeness on sensory properties and *all-trans*- β -carotene contents of dried mango slices was evaluated. Different ripeness stages, quantitatively defined by a ripening index (*RPI*), were generated from a single lot per cultivar by subjecting mature-green mangoes of the cultivars 'Nam Dokmai', 'Kaew', and 'Chok Anan' to different postharvest ripening regimes. Fruits were ripened for 2 and 3 days at 24 ± 2 °C/45–60% relative humidity (RH) and 33 ± 2 °C/50–70% RH, with application of calcium carbide (CaC_2) or 2-chloroethylphosphonic acid (CEPA, Ride[®]) beside the control, terminating postharvest ripening when fruit firmness allowed proper peeling and slicing. After ripening, fruits were washed, peeled, sliced and subsequently dried in a conventional tray dryer at 70 °C for 8–10 h, until the water activity of the dried fruits was below 0.65. Mangoes cv. 'Kaew', followed by 'Chok Anan', were more suitable for drying than cv. 'Nam Dokmai' because of superior *all-trans*- β -carotene contents of the products. Maximum β -carotene contents of dried mango slices from cvs. 'Chok Anan' and 'Kaew' corresponded to retinol equivalents of 333–383 and 483–905 per 100 g of edible portion (dry weight), meeting daily mean requirements of vitamin A for adults according to FAO/WHO. Similar to the fresh fruit, exponential rise of *all-trans*- β -carotene contents with increasing fruit ripeness was also observed for the dried products of cvs. 'Nam Dokmai' and 'Chok Anan'. Consistently, accelerated ripening at 33 °C, instead of 24 °C, resulted in higher *all-trans*- β -carotene contents of dried fruits. Both good sensory acceptance and cultivar-specific maximum *all-trans*- β -carotene contents of 13–16 and 20–23 mg kg⁻¹ usually characterised the products of 'Nam Dokmai' and 'Chok Anan' fruits with *RPI* levels between 3 and 4. Conversely, fruits cv. 'Kaew' of *RPI* levels above 6 generally yielded products inferior in sensory acceptance and β -carotene contents, while superior product quality was found at higher *RPI* levels than for the other two cultivars.