Sugars, ascorbic acid, total phenolic content and total antioxidant activity in passion fruit (Passiflora) cultivars

ABSTRACT

Background: The levels of sugars, ascorbic acid, total phenolic content (TPC) and total antioxidant activity (TAA) were determined in fruit juices from seven passion fruit (Passiflora spp.) cultivars: P. edulis cultivars Purple, Frederick, Yellow, Pink, P. edulis f. flavicarpa, P. maliformis and P. quadrangularis (we also tested this cultivar's mesocarp). Results: Purple and Yellow P. edulis had significantly higher total sugar, $142.85 \pm 0.17 \text{ g kg}^{-1}$ and $139.69 \pm 0.12 \text{ g kg}^{-1}$, respectively, than other cultivars. Glucose and fructose content were higher in juice from vine-ripened fruits of Purple, Frederick and Yellow P. edulis, P. quadrangularis and P. maliformis. Sucrose content was significantly higher in juice of non-vine-ripened fruits of P. edulis (Pink) and P. edulis f. flavicarpa. Ascorbic acid, TPC and TAA were significantly higher in vine-ripened Purple and Yellow P. edulis; ranges were $0.22$–$0.33 \text{ g kg}^{-1}$, $342.80$–$382.00 \text{ mg gallic acid equivalent L}^{-1}$ and $409.13$–$586.70 \text{ µmol Trolox L}^{-1}$, respectively. Based on principal component analysis (PCA) and cluster analysis, the main variables – °Brix, total sugar, glucose, fructose, ascorbic acid, TPC and TAA – formed the characteristics for the group comprising Purple and Yellow P. edulis. Conclusions: Glucose, fructose, sucrose, ascorbic acid, TAA and TPC were quantified in passion fruit juices. Variation of the above variables in juices of Passiflora depends on the cultivar and ripeness.

Keyword: Ascorbic acid; HPLC; Passion fruit cultivars; Sugars; Total antioxidant activity; Total phenolic content