Abstract

Black (aerated) and green (unaerated) tea products, processed from 10 green and 18 purple leaf coloured cultivars of Kenyan origin, and two tea products, from the Japanese cultivars, Yabukita and Yutakamidori, were assayed for total polyphenols (TP) content, individual catechin profiles and *in vitro* antioxidant capacity (AA). In addition, the phenolic content of the tea products was determined using the Folin–Ciocalteu phenol reagent. Catechin fractions were identified using reverse phase high performance liquid chromatography (HPLC) with a binary gradient elution system.

The AA% of the tea products was determined using a 2,2′-diphenyl picrylhydrazyl (DPPH) radical assay method. The results showed that TPs, catechin profiles and antioxidant activities were significantly ($p \leqslant 0.05$) higher in unaerated than in aerated teas. Tea products from the purple leaf coloured tea cultivars had levels of TPs, total catechin (TC) and antioxidant activities similar to those from the green leaf coloured cultivars, except for teas from the Japanese cultivars that were very low in the assayed parameters. Caffeine content was significantly ($p \leqslant 0.05$) lower in products from the purple leaf coloured cultivars than in those from the green leaf coloured tea cultivars. Antioxidant activity (%) was higher in tea products from the Kenyan germplasm than in those from the Japanese cultivars. Antioxidant potency of tea products was significantly ($r = 0.789^{**}$, $p \leqslant 0.01$) influenced by the total anthocyanin content of the purple leaf coloured cultivars. Cyanidin-3-O-glucoside was the anthocyanin most highly correlated with AA% ($r = 0.843^{**}$, $p \leqslant 0.01$ in unaerated tea). Total catechins in the unaerated products from the green leaf coloured tea cultivars were also significantly correlated with antioxidant capacity ($r = 0.818^{**}$, $p \leqslant 0.01$). Results from this study suggest that the antioxidant potency of teas is dependent on the predominant flavonoid compound, the type of tea cultivar and the processing method.