412/D

Effect of thermal treatments on antioxidant properties of *Anacardium occidentale L.*

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Antioxidant activity of *Anacardium occidentale L.* (Eng. Cashew nut) kernel and testa subjected to different thermal treatments (as carried out by the Sri Lanka Cashew Corporation, SLCC) has not been studied so far. Raw air-dried cashew nuts obtained from SLCC were heated to 90 °C for 4 hours (LT). A portion of the heated nuts were heated at 200 °C for 10 minutes (HT). The testa and kernels were defatted using hexane. The present study reports the content of phenols, flavonoids, proanthocyanidins as well as the reducing power using ferric ions, antioxidant capacity measured using phosphomolybdic acid and DPPH scavenging activity of the methanolic and acidified methanolic extracts obtained from defatted testa (5.0 g) and kernels (5.0 g) of air-dried samples as well as those subjected to LT and HT. The content of phenols, flavonoids and proanthocyanidins were determined using Folin-Ciocalteu reagent, aluminium chloride and vanillin in HCl respectively. The results were subjected to statistical analyses by one-way ANOVA and Tuckey's pair wise comparison using Minitab.

The free phenol content (gallic acid equivalents mgg^{-1}) of raw kernel and testa were 1.98±0.01 and 70.60±1.01 respectively while those subjected to LT and HT were 1.79±0.06, 117.07±0.21 (for kernel) and 2.39±0.01, 133.95±1.11 (for testa) respectively. The total phenols (gallic acid equivalents mg g^{-1}), free and total flavonoids (catechin equivalents mg g^{-1}), free and total proanthocyanidins (catechin equivalents mg g^{-1}) as well as the reducing power (gallic acid equivalents mg g^{-1}), total antioxidant activity measured using Mo(VI) (ascorbic acid equivalents mg g^{-1}), DPPH scavenging capacity of (BHT equivalents mg g^{-1}) of the methanolic and acidified methanolic extracts of the kernel were 2.07 ± 0.03, 0.73 ± 0.03, 0.76 ± 0.03, 1.94 ± 0.01, 2.51 ± 0.09, 1.36 ± 0.10, 1.70 ± 0.09, 3.35 ± 0.21, 3.77 ± 0.04, 5.04 ± 0.01, 6.30 ± 0.19 respectively while those subjected to LT were 2.00 ± 0.04, 0.63 ± 0.05, 0.67 ± 0.03, 2.13 ± 0.20, 3.63 ± 0.44, 3.74 ± 0.13, 3.94 ± 0.17, 2.82 ± 0.16, 3.17 ± 0.17, 4.77 ± 0.09 and 5.01 ± 0.07 respectively and those subjected to HT were 2.82 ± 0.09, 0.77 ± 0.02, 0.79 ± 0.01, 2.03 ± 0.14, 3.16 ± 0.08, 3.82 ± 0.28, 4.04 ± 0.12, 3.85 ± 0.34, 4.15 ± 0.10, 6.75 ± 0.02 and 7.28 ± 0.06 respectively.

The results indicated that the testa had higher free phenol content and antioxidant activity compared to the kernel and it could be used as a potential source of natural antioxidants. Further, *in vitro* antioxidant capacity of thermally processed nuts is better than in raw nuts. A strong positive correlation was shown between the total phenolic content and the reducing power, the total antioxidant capacity and DPPH scavenging capacity, suggesting a strong contribution of the phenols to the overall antioxidant activity.

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