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HPLC-diode array determination of total carotenoids in coconut oil

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Unsaponifiable fraction of vegetable oils is responsible for antioxidant properties and several other beneficial health effects. Even though the beneficial properties of the polar compounds present in the unsaponifiable fraction of coconut oil have been reported, the information available about the non-polar antioxidants in coconut oil is meager. Among non-polar antioxidants, β-carotene is important due to its pro vitamin A activity.

In the present study, the total carotenoid content of traditional coconut oil (TCO, prepared by boiling coconut milk), commercially available coconut oil (CCO, prepared by pressing copra), commercially available cosmetic grade virgin coconut oil (CVCO, prepared by pressing desiccated coconut with pairings), commercially available food grade virgin coconut oil (FVCO, prepared by pressing desiccated coconut) and cold extracted virgin coconut oil (CEVCO, prepared by chilling coconut milk) were determined using a reverse phase HPLC method. The total carotenoid content was expressed as β–carotene equivalents. β-carotene in the tested coconut oils were quantified by comparison of the signal areas of the HPLC chromatograms. For this purpose, a calibration plot prepared by using an authentic sample of β-carotene was used. Results are given in Table 1.

Table 1: The total carotenoid content in coconut oils

Oil type	Total carotenoid content* (mg/kg of oil)
TCO	4.53 ± 0.95
CCO	0.45 ± 0.15
CVCO	0.77 ± 0.10
FVCO	0.15 ± 0.10
CEVCO	1.47 ± 0.12

*Each data point represents the mean of three replicates ± SD

The results suggest that the total carotenoid contents depend on the extraction conditions of coconut oils. Total carotenoid content of TCO is at least 4-5 times higher than that of other VCOs and CCO. The higher content of total carotenoids suggests that TCO may be nutritionally more important than VCOs and CCO.

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