

Olive, Avocado and Coconut Oils Fortified with Fruit Phenolic Antioxidants

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Plant oils like olive, avocado and coconut oils, containing beneficial constituents such as unsaturated fatty acids, medium-chain fatty acids, carotenoids, squalene and vitamins, are prone to oxidation upon prolonged exposure to oxygen, light, elevated temperatures and moisture. The use of antioxidants to prevent/retard lipid oxidation during storage has long been an established practice, because of the ability of antioxidants to intercept free radicals. Naturally occurring fruit phenolic antioxidants have been shown to possess health-promoting properties beyond their antioxidant effects. Therefore, incorporating fruit phenolic antioxidants into oil products may provide dual benefits, through improving the stability of the final oil product and increasing its benefit to health.

This study investigated the ability of fruit phenolic antioxidants (caffeic acid, *p*-coumaric acid, quercetin and commercially available kiwifruit polyphenol extract) to prevent lipid oxidation in olive, avocado and coconut oils during ambient and accelerated thermal storage. The stability and quality of the resultant formulated oil products were assessed based on their total phenolic content, peroxide value, total free fatty acids, and fatty acid composition. Different phenolic compounds improved the stability of oil products in different ways and to different extents, depending on the type of oil and phenolic compound as well as the storage temperatures and periods. The incorporation of phenolics offered protection to desirable unsaturated fatty acids at elevated temperatures, did not cause negative effects on the colour attribute, and resulted in an increased total phenolic content in the final product. The results provide information for optimising formulations of fruit polyphenol-enhanced functional oil products, suggesting a positive outcome for the use of these phenolic antioxidants as functional ingredients in plant oil products.

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