Antioxidant and pro-oxidant effects of tocopherol during the storage of Flat-European hybrid hazelnut oil

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May 10, 2021

Abstract

In order to analyze promotion and antioxidant effects of tocopherol in Flat-European hybrid hazelnut Oil, different amounts of α and δ -tocopherol were added into the purified Flat-European hybrid hazelnut oil and accelerated at 62 for 20 days to simulate the storage process of it, and the peroxidation index was measured respectively. Compared with the purified Flat-European hybrid hazelnut oil without tocopherol, the inflection point of tocopherol concentration and the change trend of its oxidation index were observed, and the antioxidant effects of several antioxidants in the hazelnut oil were compared, which provided a theoretical basis for adding antioxidants during storage of Flat-European hybrid hazelnut oil. When the content of α -tocopherol in Flat-European hybrid hazelnut oil filtered from tocopherol or normal one is respectively less than 500mg/kg or 300mg/kg, which plays an anti-oxidation effect. If it exceeds this value, it will act as a pro-oxidant effect, but δ -tocopherol has no such phenomenon. During the storage of oil with two kinds of tocopherol, α -tocopherol has better anti-oxidation ability than δ -tocopherol. The antioxidant effects of various antioxidants in hazelnut oil are: gallic acid > TBHQ > VC > tocopherol. Under the addition conditions specified in the national standard, gallic acid, TBHQ, VC, α -tocopherol and δ -tocopherol can prolong the storage period of Flat-European hybrid hazelnut oil at room temperature by 720.3, 318, 42.3, 19.5, and 9.6 days respectively compared with that without addition.

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