

Flavonoids as stabilizers of fish oil: An alternative to synthetic antioxidants

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Abstract

The antioxidant activities against fish oil oxidation of six commercially available flavonoids and of five flavonoids purified from two Chilean native plants were compared to those of *d*- α -tocopherol and of two synthetic antioxidants, butylated hydroxytoluene and butylated hydroxyanisole. Among the commercial flavonoids, catechin, morin and quercetin showed a higher activity when fish oil oxidation (either spontaneous or Fe^{2+} -induced) was assessed from the formation of peroxides or thiobarbituric acid-reactive substances. Among the native flavonoids, the 5,3',4'-trihydroxy-7-methoxy flavanone (designated as Pt-2) showed the highest antioxidant activity. Mixtures of quercetin or of Pt-2 with *d*- α -tocopherol produced better inhibitory effects when compared to that of each substance assayed by itself. Also, when Pt-2 and quercetin were assayed in combination (0.3 g/kg oil and 0.7 g/kg oil, respectively), a synergistic antioxidant effect was observed. Results indicate that several flavonoids could be used as natural antioxidants as a means to replace those synthetic antioxidants, the use of which has been questioned.