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Isolation of four tocotrienol homologues and plastochromanol-8 from plant oils and the rapid ‘green’ analysis of nine tocochromanols in cold-pressed plant oils via superficially porous particle packed column technology and supercritical fluid chromatography.

In the present study, four tocotrienol (T3) homologues and plastochromanol-8 (PC-8) were isolated from plant oils; *Linum usitatissimum* (PC-8), *Bixa orellana* (γ-T3 and δ-T3), and *Triticum spelta* bran (α-T3 and β-T3) by supercritical fluid chromatography (SFC). The optimized method of tocopherols, tocotrienols, and PC-8 separation via SFC with UV detection was validated on a biphenyl core-shell column. The sample preparation conditions of the plant oils involved a simple dilution in 2-propanol (1:9, v/v), followed by the direct injection into the SFC. A final assay was developed that facilitated the rapid (<15 min) and sensitive (limit of detection within the range of 2.5–7.4 μg/mL and the limit of quantitation within the range of 7.7-22.6 μg/mL) analyses of tocochromanols in obtained cold-pressed oils from twenty-four different plant species. Furthermore, the method was repeatable and reproducible with % RSD values in the context of standard retention times which ranged within 0.10-0.31 intraday and 0.59-0.79 interday.

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