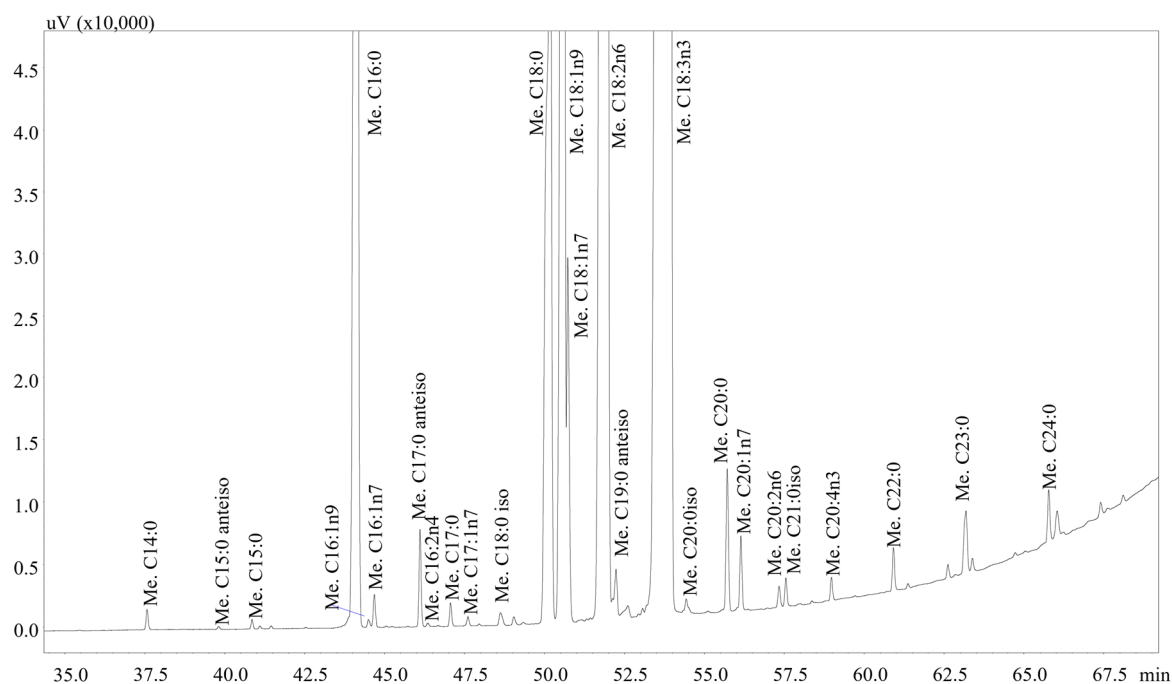
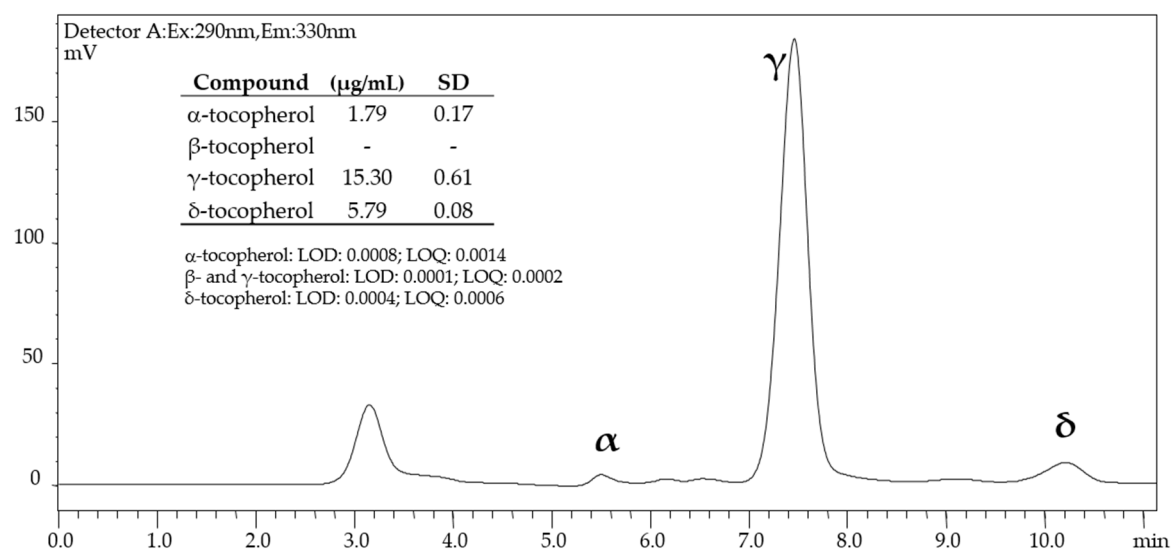


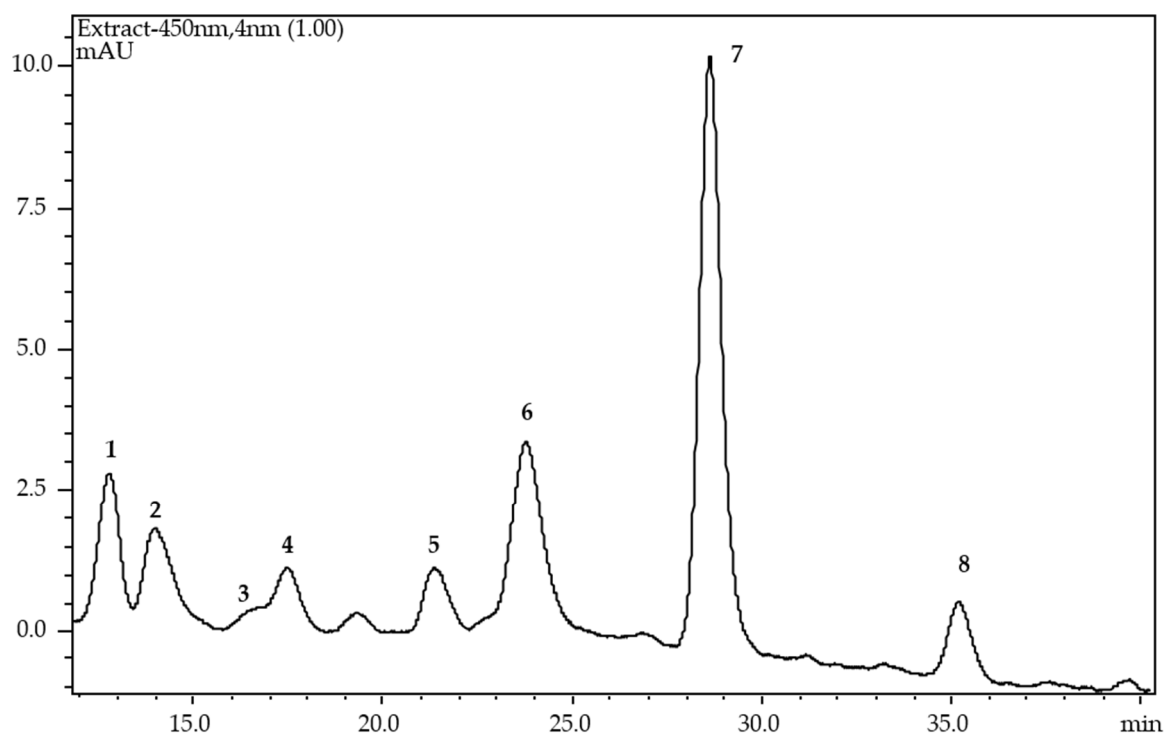
## Supplementary Materials



**Figure S1:** GC-FID chromatogram relative to the esterified FA composition of chia seed oil.



**Figure S2:** HPLC chromatogram of tocopherols in chia seed oil. The table in the insert report the quantitative results (mg/mL) along with the standard deviation (SD) of three replicates.



**Figure S3:** HPLC-PDA chromatogram, extracted at 450 nm, of xanthophylls in chia seed oil. Peak numbering: 1, Neochrome; 2, Luteoxanthin; 3, Auroxanthin; 4, Antheraxanthin; 5, Mutatoxanthin; 6, Lutein; 7, all E-Zeaxanthin; 8, 9,9'-Z-Zeaxanthin.

**Table S1.** List of identified phenolic compounds in Chia seed oil, along with retention time (RT), molecule-related ion ( $[M-H]^-$ ) and chemical class.

RT	$[M-H]^-$	Compounds	Chemical Classes
10.93	153.1	Protocatechuic acid	Phenolic acid (benzoic acid derivative)
11.55	289.3	Catechin/Epicatechin	Flavanol
20.72	431.2	Genistin	Isoflavone glucoside
22.13	311.3	Caftaric acid	Phenolic acid (hydroxycinnamic acid derivative)
		Protocatechuic acid glucoside	Phenolic acid derivative (phenolic glucoside)
24.71	315.3		
25.85	359.2	Rosmarinic acid	Phenolic acid (hydroxycinnamic acid derivative)
29.35	317.5	Myricetin	Flavonol
32.31	315.3	Methylquercetin isomer I	Flavonol
32.83	315.3	Methylquercetin isomer II	Flavonol
			Phenolic acid dimer (hydroxycinnamic acid derivative)
33.2	293.3	Dehydrodiferulic acid	
34.65	387.3	Medioresinol	Lignan
			Phenolic acid derivative (hydroxycinnamic acid ester)
35.26	397.4	Sinapoylquinic acid	

**Table S2.** List of identified xanthophylls along with UV-VIS and MS spectral data (molecule-related ion and fragments in positive ion mode)

N.	Carotenoid	$\lambda_{\max}$ UV-Vis (nm)	[M+H] <sup>+</sup>	Fragments
1	Neochrome	400, 422, 450	601.5	583.4, 565.6
2	Luteoxanthin	399, 423, 449	601.5	583.4, 565.6
3	Auroxanthin	382, 402, 427	601.5	583.4, 565.6
4	Antheraxanthin	421, 441, 473	585.4	567.3, 549.5
5	Mutatoxanthin	405, 428, 453	585.4	567.3, 549.5
6	Lutein	422, 446, 472	569.6	551.5, 533.3, 476.4
7	all <i>E</i> -Zeaxanthin	426, 452, 478	569.6	551.5, 533.3, 476.4
8	9,9'-Z-Zeaxanthin	338, 419, 446, 473	569.6	551.5, 533.3, 476.4