

Oxidative properties of Moringa oleifera kernel oil from different extraction methods during storage

Article

Supplemental Material

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Table 1 Fatty acid composition (%) of *Moringa oleifera* oil from (a) solvent (hexane) extraction method (SE), (b) aqueous enzymatic extraction (AEE) method, (c) aqueous enzymatic extraction method with boiling pre-treatment (B-AEE), and (d) aqueous enzymatic extraction method with high pressure processing pre-treatment (HPP-AEE) on day 0 and after 140 days of storage at different temperatures. nd, not detected

(a) Solvent (hexane) extraction method (SE)

Fatty acid	Day 0	Day 140		
		13 °C	25 °C	37 °C
C14:0	0.02±0.00	0.03±0.00	0.03±0.00	0.02±0.00
C16:0	5.90±0.01	5.97±0.00	5.89±0.00	5.98±0.01
C16:1	1.35±0.02	1.37±0.00	1.31±0.00	1.30±0.01
C18:0	4.92±0.00	4.93±0.00	4.90±0.01	4.90±0.02
C18:1n9c	73.57±0.04	73.47±0.02	73.55±0.03	73.68±0.18
C20:0	3.72±0.00	3.70±0.00	3.72±0.01	3.71±0.01
C18:3n3	2.74±0.01	2.76±0.00	2.75±0.00	2.73±0.00
C22:0	6.32±0.02	6.32±0.01	6.36±0.00	6.26±0.07
C20:3n3	0.20±0.00	0.19±0.00	0.20±0.00	0.17±0.04
C20:4n6	0.05±0.00	0.06±0.00	0.06±0.00	0.06±0.00
C24:0	1.21±0.00	1.22±0.00	1.22±0.01	1.20±0.00
Total saturated fatty acids	22.09	22.16	22.13	22.08
Total monounsaturated fatty acids	74.92	74.84	74.86	74.98
Total polyunsaturated fatty acids	2.99	3.00	3.01	2.96

(b) Aqueous enzymatic extraction (AEE) method

Fatty acid	Day 0	Day 140		
		13 °C	25 °C	37 °C
C14:0	0.03±0.01	0.03±0.00	0.02±0.01	0.01±0.00
C16:0	6.09±0.04	5.86±0.01	5.90±0.02	5.87±0.01
C16:1	1.28±0.01	1.34±0.00	1.23±0.02	1.20±0.01
C18:0	5.23±0.01	4.55±0.01	4.83±0.04	4.76±0.02
C18:1n9c	72.73±0.12	76.45±0.06	73.94±0.14	74.10±0.13
C20:0	3.88±0.03	3.26±0.02	3.62±0.04	3.61±0.02
C18:3n3	2.65±0.02	2.97±0.01	2.74±0.01	2.74±0.01
C22:0	6.63±0.10	4.54±0.00	6.35±0.05	6.24±0.02
C20:3n3	0.18±0.00	0.12±0.00	0.18±0.05	0.21±0.01
C20:4n6	0.05±0.00	nd	0.05±0.02	0.05±0.02
C24:0	1.24±0.02	0.88±0.00	1.18±0.03	1.21±0.00
Total saturated fatty acids	23.10	19.13	21.89	21.71
Total monounsaturated fatty acids	74.01	77.78	75.16	75.30
Total polyunsaturated fatty acids	2.89	3.09	2.96	2.99

(c) Aqueous enzymatic extraction method with boiling pre-treatment (B-AEE)

Fatty acid	Day 0	Day 140		
		13 °C	25 °C	37 °C
C14:0	0.03±0.00	0.02±0.00	0.01±0.00	nd
C16:0	5.98±0.01	5.92±0.01	5.94±0.01	5.90±0.01
C16:1	1.26±0.01	1.25±0.01	1.21±0.01	1.21±0.01
C18:0	5.09±0.01	4.85±0.02	4.91±0.02	4.81±0.01
C18:1n9c	73.40±0.04	73.88±0.07	73.71±0.08	73.98±0.07
C20:0	3.78±0.01	3.64±0.02	3.65±0.02	3.60±0.01
C18:3n3	2.73±0.01	2.77±0.01	2.74±0.00	2.73±0.00
C22:0	6.30±0.02	6.20±0.01	6.31±0.01	6.26±0.03
C20:3n3	0.18±0.02	0.21±0.00	0.22±0.01	0.21±0.01
C20:4n6	0.04±0.02	0.06±0.00	0.06±0.00	0.05±0.02
C24:0	1.21±0.02	1.22±0.01	1.24±0.01	1.24±0.02
Total saturated fatty acids	22.39	21.84	22.06	21.82
Total monounsaturated fatty acids	74.66	75.12	74.93	75.19
Total polyunsaturated fatty acids	2.95	3.04	3.02	2.99

(d) Aqueous enzymatic extraction method with high pressure processing pre-treatment (HPP-AEE)

Fatty acid	Day 0	Day 140		
		13 °C	25 °C	37 °C
C14:0	0.02±0.00	0.01±0.00	0.02±0.00	nd
C16:0	5.85±0.02	5.79±0.01	5.86±0.03	5.79±0.01
C16:1	1.17±0.00	1.18±0.00	1.19±0.01	1.12±0.01
C18:0	4.77±0.01	4.80±0.01	4.77±0.03	4.70±0.01
C18:1n9c	74.26±0.07	74.03±0.03	74.45±0.22	74.46±0.03
C20:0	3.60±0.02	3.64±0.01	3.56±0.04	3.55±0.00
C18:3n3	2.65±0.01	2.69±0.01	2.64±0.02	2.67±0.00
C22:0	6.20±0.02	6.41±0.02	6.17±0.12	6.27±0.01
C20:3n3	0.22±0.01	0.19±0.00	0.17±0.04	0.20±0.00
C20:4n6	0.04±0.00	0.03±0.00	0.03±0.00	0.03±0.00
C24:0	1.22±0.00	1.23±0.01	1.16±0.02	1.20±0.00
Total saturated fatty acids	21.66	21.88	21.53	21.52
Total monounsaturated fatty acids	75.43	75.20	75.64	75.58
Total polyunsaturated fatty acids	2.91	2.91	2.84	2.90