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FATTY ACID AND TRIACYLGLYCEROL COMPOSITIONS OF *Capparis spinosa* SEED OIL

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Capparis spinosa of the family Capparidaceae grows wild in different parts of Iran and especially has extensive distribution in Dashte-Moghan [1]. Only a few studies on the fatty acid composition and other characteristics of seed oil from *C. spinosa* are available [2–6]. Ripe fruits of *Capparis spinosa* were picked from wild plants at different locations in Dashte-Moghan, and values were expressed as the mean of three separate contents.

Oil from milled seeds (200 g) was extracted with hexane as the extractant (68–70°C) in a Soxhlet apparatus. Oil content was determined by Soxhlet extraction for 6 hours by boiling the solvent (68–70°C) according to international standard ISO 659 [7].

The percentage of crude oil of *C. spinosa* seed was 31.20% (w/w).

According to the international standard ISO5509 [8], the fatty acid (FA) composition was analyzed by GC and the analysis of triacylglycerols (TAG) was performed according to the equivalent carbon number of triglycerides given by the IUPAC method 2324 [9].

On the basis of FA composition, *C. spinosa* seed oil is regarded as oleic- linoleic oil. The polyunsaturated FA (PUFA) of the oil amounted to 49% of the total FA, while the monounsaturated and saturated FA (MUFA and SAFA) amounted to 38% and 13%, respectively (Table 1). The ratio of polyunsaturated/saturated (P/S) fatty acids of *C. spinosa* seed oil was 3:7. These results are in agreement with those previously reported [6] and in disagreement with the previously reported contents of the three most important FA [2, 3, 5].

According to the distribution of TAG, the predominant TAG species are PLL, 28.72%, LLL, 20.33%, and PLO, 18.29% (Table 2). TAG with ECN of 44 were dominant (34.12%), followed by TAG with ECN of 46 (26.49%) in *C. spinosa* seed oil. The 18:2 acid clearly has a higher occurrence in the SN-2 position.

The shorter chain length saturated FAs, 16:0 and 18:0, are mainly located in the SN-1 position and less in the SN-2 and 3 positions. This TAG composition reflects the close relationship between the fatty acids and triacylglycerol content of the oil. No data on the TAG molecular species profile of *C. spinosa* seed oil was available in the literature for comparative purposes. This parameter can be a useful tool in the identification and discrimination of vegetable oils [10].

TABLE 1. Fatty Acid Composition of *Capparis spinosa* seed oil, %

Fatty acid	Value	Fatty acid	Value
12:0	0.11	18:2 (n-6)	47.37
14:0	0.44	18:3 (n-3)	1.16
16:0	8.93	20:0	0.5
16:1 (n-7)	1.89	20:1 (n-9)	0.31
17:0	0.12	22:0	0.57
17:1	0.26	SAFA	13.12
18:0	2.45	MUFA	38.38
18:1 (n-9)	22.71	PUFA	48.53
18:1 (n-7)	13.21		

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TABLE 2. Triacylglycerol Composition of *Capparis spinosa* Seed oil

Triacylglycerol species	ECN	% of Total TAG content	Triacylglycerol species	ECN	% of Total TAG content
LnLnLn	40	0.43	OOO	48	6.10
LLL	42	20.33	SLO	48	6.28
PLL	44	28.72	POO	48	2.24
LOL	44	5.40	SOO	50	1.62
PLnO	46	0.19	POS	50	0.53
PLO	46	18.29	OSS	52	0.77
LPP	46	8.01			

P – palmitic; S – stearic; O – oleic; L – linoleic; Ln – linolenic; ECN – equivalent carbon number (carbon number – 2 × number of double bonds).

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