

NEUTRAL LIPIDS FROM *Silybum marianum* SEEDSE. A. Garaev,¹ I. S. Movsumov,¹ and F. Yu. Gazizov^{2*}

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Silybum marianum (Asteraceae) is a medicinal plant, the seeds of which have been used for a long time in folk medicine for various diseases [1, 2]. The seeds contain fatty oil, flavolignans, amino acids, macro- and microelements, silymarin, silybin, and cirsil [3–6].

The seed oil exhibits wound-healing, anti-burn, and hepatoprotective properties and is comparable to seabuckthorn oil in biological activity [7].

Our goal was to study neutral lipids (NL) from *S. marianum* seeds.

Seeds were collected when completely ripe near Fatman village of Apsheron Region of Baku (middle of June 2007). Seeds weighed 2.55 g per 100 with 8.02% moisture. They were ground and extracted with hydrocarbons (yield 29.3% of air-dried material). The qualitative and quantitative compositions of the NL were determined by column chromatography and TLC over silica gel. The hydrocarbon extract contained 12 classes of NL, 7 of which were identified by comparison with standards, qualitative reactions, and literature data [8]. Triacylglycerides (TAG) (97.5%) were the major components:

<i>Neutral lipids</i>	%	<i>Neutral lipids</i>	%
Hydrocarbons	0.1	Unident.	0.4
Sterol and triterpenol esters	0.2	Unident.	0.3
Triacylglycerides	97.5	Diacylglycerides (DAG)	0.2
Unident.	0.4	Unident.	0.1
Unident.	0.3	Monoacylglycerides (MAG)	0.1
Free fatty acids (FFA)	0.2	Sterols	0.2

The fatty-acid composition of total lipids and acyl-containing classes was determined. The results were compared with already published data (Table 1).

It can be seen that the quantitative contents of the individual acids were highly scattered. This could be explained by differences in the climates.

The fatty-acid composition of *S. marianum* seed oil was similar to that of food plant oils [12].

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TABLE 1. Fatty-Acid Composition of *Silybum marianum* Neutral Lipids

Fatty acids	GLC, %							
	Total lipids	TAG	FFA	DAG	MAG	Oil		
						Poland [9]	Iran [10]	Argentina [11]
12:0	2.4	3.1	Tr.	3.4	0.6			
Unident.	–	0.1	Tr.	Tr.	Tr.			
14:0	0.5	0.2	0.2	1.4	0.3			
Unident.	0.1	0.1	–	0.6	Tr.			
Unident.	0.3	0.1	0.2	1.0	0.2			
16:0	12.0	20.1	12.3	12.6	10.4	7.4	8.3	9.4
16:1	Tr.	Tr.	Tr.	6.6	1.2		0.1	
Unident.	–	0.2	Tr.	0.6	Tr.			
18:0	6.7	0.6	5.2	4.5	4.2	5.0	6.7	
18:1	38.2	34.7	33.6	31.3	37.0	20.9	32.1	27.1
18:2	34.0	38.7	43.2	34.2	43.2	60.3	45.4	55.3
20:0	3.6	2.1	3.2	3.8	2.9	3.3	4.1	
22:0	2.2	–	2.1	–	–	3.0	2.6	
$\Sigma_{\text{sat.}}$	27.4	26.1	23.0	25.7	17.8			
$\Sigma_{\text{unsat.}}$	72.2	73.4	76.8	72.1	81.4	81.2	77.5	82.4
$\Sigma_{\text{unid.}}$	0.4	0.5	0.2	2.2	0.8			
Yield of oil, %			29.3			21.6	25.0	27.2

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