

LIPIDS FROM *Descurainia sophia* SEEDS

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Descurainia sophia L. (Cruciferae) is widely used in folk medicine. The decoction of the aerial part is used in Middle Asia for throat diseases and as an antipyretic for measles and smallpox. In Tibetan medicine, the roots are used for St. Anthony's fire and anthrax. The tincture is used as a diuretic, antihelmintic, and hemostatic for internal hemorrhages. In veterinary medicine, the decoction of roots is used for helminthoses and diarrhea in horses and cattle [1, 2].

We studied seeds of *D. sophia* collected in Tashkent district in May 2002. Seeds were ground in an electric grinder and extracted exhaustively with benzene (70-80°C) for extraction to afford a yellowish-brown oil in 22% yield. Total lipids were separated by preparative TLC on silica-gel plates using benzene:diethylether (4:1). The contents of individual fractions were estimated gravimetrically. Table 1 lists the results for benzene separation of the extract of *D. sophia* seeds.

Lipids from seeds contained epoxyacylglycerides according to reaction with picric acid. Their content was 6.4% of the lipid mass. Oxygenated compounds are typically found in seed oil from Cruciferae plants.

Total lipids and acyl-containing compounds in them were hydrolyzed by KOH. Fatty acids (FA) were methylated by diazomethane [3] and identified as methyl esters by GC (Table 2). The lipids contained up to 16 FA. The main acids in total lipids and triglycerides (TAG) were linolenic (18:3), linoleic (18:2), arachic (20:0), and eruchic (22:1). The content of these acids and oleic (18:1) in free fatty acids (FFA) were almost identical from 14.2 to 15.9%; of palmitic (16:0), 12.0%. This is two times greater than in the total acids.

The FA composition of seeds from plants studied by us differed little with respect to the content of unsaturated C₁₈ acids from that reported in a review on screening of seed oils from Cruciferae plants [4]. The difference in flora from Uzbekistan consists of a content of 16:0 and 22:1 acids that is elevated several times.

TABLE 1. Lipid Composition of *Descurainia sophia* L. Seeds

Lipids	Content, mass %
Hydrocarbons	1.0
Esters of FA and cyclic alcohols	1.9
Triacylglycerides	86.7
Epoxyacylglycerides	6.4
Free fatty acids	1.0
Triterpenols	0.8
Sterols	0.8
Diacylglycerides	0.9
Monoacylglycerides	0.5

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TABLE 2. Fatty-Acid Composition of Lipids from *Descurainia sophia* L. Seeds

Fatty acid	Sample		
	Total FA	TAG	FFA
10:0	-	-	Tr.
12:0	Tr.	-	0.5
13:0	-	-	0.5
14:0	0.3	0.1	0.9
15:0	Tr.	0.1	1.0
16:0	6.2	5.1	12.0
16:1	0.8	0.3	1.3
17:0	Tr.	Tr.	1.1
18:0	2.1	1.3	4.6
18:1	10.2	9.1	15.8
18:2	15.9	15.8	14.2
18:3	37.1	34.7	15.9
20:0	12.1	16.2	15.5
20:1	2.1	2.4	2.3
20:2	2.3	2.4	2.6
22:1	10.9	12.5	11.8
$\Sigma_{\text{sat.}}$	20.7	22.8	36.1
$\Sigma_{\text{unsat.}}$	79.3	77.2	63.9

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