LIPIDS OF *Capparis spinosa* SEEDS*

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UDC 547.916.665.33

In continuation of the study of lipids from *Capparis spinosa* L. [1], we studied seeds collected in Jizak District of Uzbekistan.

Free lipids (FL) from ground seeds were extracted in a Soxhlet apparatus using hydrocarbons (bp 72-80°C); bound lipids (BL), by $CHCl_3$ and CH_3OH (2:1, v/v), also in a Soxhlet apparatus. Then, BL were separated into neutral lipids (NL), glycolipids (GL), and phospholipids (PL) by column chromatography over silica gel [1]. The contents of the lipid classes were determined gravimetrically. Table 1 lists the properties of the seeds and the contents in them of the lipids.

Analysis of the BL in a thin layer of silica gel using hexane:ether (4:1 and 1:1) compared with model compounds showed that the principal components were triacylglycerides; the minor ones, hydrocarbons, sterols, and diacyl- and monoacylglycerides.

Total GL contained monogalactosyldiacylglycerides, digalactosyldiacylglycerides, sterolglycosides and their esters. The PL included phosphatidylinositols, phosphatidylethanolamines, and phosphatidylcholines, with the last as the major component [2].

Fatty acids of acyl-containing BL, GL, and PL classes were isolated by alkaline hydrolysis [3]. Their composition was established by GC on a Khrom-5 instrument with a flame-ionization detector using a steel column (2.5 m length) and N-AW at 192°C.

Table 2 gives the fatty acid composition.

Judging from the results, the principal acids of all lipid classes were 16:0, 18:1, and 18:2 acids.

The fraction of 16:0 was lowest in FL (4.9%) and greater by 5.7 and 4.7 times in the GL and PL, respectively. The content of 18:0 acid was elevated in GL (10.1%), which was 5 times greater than in BL and almost 2 times greater than in PL.

Significant variations were observed in the content of 18:2 acid. Its mass was highest in BL, 59.2%; in PL, 36.3%; in GL, only 18.4%. The fraction of 18:1 acid in the studied lipids varied insignficantly, from 21.2% in PL to 28.9% in BL.

TABLE 1. Principal Properties of *Capparis spinosa* Seeds

Property	Value	BL class	Content, % of seed mass
Mass of 1000 seeds, g	1.16	Neutral lipids	0.2
Moisture of seeds, % of mass	6.50	Glycolipids	0.4
FL content (oil content), % of seed mass per abs. dry wt.	27.49	Phospholipids	0.3
BL content, % of seed mass	0.9		

*Materials presented at the 7th International Symposium on the Chemistry of Natural Compounds, October 16-18, 2007, Tashkent, Uzbekistan.

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0009-3130/08/4405-0637

TABLE 2. Fatty Acids of *Capparis spinosa* Lipids, GC, mass %

Acid	Total free lipids	Total bound lipids	
		Glycolipids	Phospholipids
12:0	Tr.	1.3	0.5
14:0	0.5	3.0	1.6
16:0	4.9	28.2	23.3
16:1	1.2	4.7	5.2
18:0	2.0	10.1	5.4
18:1	28.9	26.4	21.2
18:2	59.3	18.4	36.3
Unident.	3.2	7.9	6.5
$\Sigma_{Sat.}$	7.4	42.6	30.8
$\Sigma_{Unsat.}$	89.4	49.5	62.7

Differences in the content of the separate fatty acid components in BL, GL, and PL had an effect on the total fraction of saturated and unsaturated acids. Thus, the highest mass of unsaturated components (89.3) occurred in BL; the lowest (49.5), in GL. Correspondingly, the content of total saturated fatty acids in GL was elevated to 42.6% compared with BL (7.4) and PL (30.8).

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