

PUBLICATIONS

LIPIDS OF THE SEEDS OF *Astragalus sieversianus* PALL.

S.N. Shomuratova, N.K. Yuldasheva, S.D. Gusakova, S.Z. Nishanbaev

S.Y. Yunusov Institute of the Chemistry of Plant Substances, 77, Mirzo-Ulugbek Str.,
Tashkent, 100170, Uzbekistan

Astragalus sieversianus Pall. is one of the promising medicinal plants of the flora of Uzbekistan, naturally growing in the foothill and adyr regions of the country. Representatives of the genus *Astragalus* are an important source of biologically active compounds, including flavonoids, saponins, polysaccharides, and other secondary metabolites. The aim of the study was to investigate the lipid content and composition of the seeds of *A. sieversianus* collected in the Kashkadarya region.

Neutral lipids (NL) were extracted from ground seeds with petroleum benzene (boiling point 72–80°C) using a Soxhlet apparatus. Polar glycolipids (GL) and phospholipids (PhL) were subsequently extracted from the remaining meal with a chloroform-methanol mixture. The composition of the NL and PL classes was determined by thin-layer chromatography (TLC) on silica gel, while the carotenoid content was determined by spectrophotometry.

The content of neutral lipids in the seeds was 7.6% on a dry weight basis, phospholipids accounted for 1.17%, and the carotenoid content was 57.8 mg%. The carotenoid content in the neutral lipid fraction was 667 mg%. The neutral lipid fraction contained triacylglycerols, hydrocarbons, carotenoids, fatty acid esters of phytosterols and triterpenols, free fatty acids, free triterpenols, and phytosterols. Fatty acids were isolated from the neutral lipid fraction and analyzed as their methyl esters by gas chromatography (GC) using an Agilent 8860 GC gas chromatograph. The results are presented in Table 1.

Table 1. Fatty acid composition of seed lipids of *A. sieversianus* Pall. determined by GC, % of fatty acids.

Fatty acid	NL	GL	FL	Fatty acid	NL	GL	FL
10:0	0,10	0,42	0,18	18:2 ω 6	36,13	16,22	26,73
12:0	0,21	0,95	0,39	18:3 ω 3	18,22	6,75	4,97
14:0	0,17	1,98	0,19	20:0	0,42	0,86	0,84
15:0	0,20	1,00	0,55	20:1 ω 9	0,27	3,74	1,63
16:0	14,30	35,28	27,80	22:0	0,16	0,97	0,25
16:1	0,40	0,41	0,29	22:1 ω 9	0,41	0,31	0,15
17:0	0,11	0,74	0,25	24:0	0,04	0,26	0,95
18:0	2,32	5,12	1,55	Σ satur.FA	18,03	47,58	32,95
18:1 ω 9	24,89	22,14	30,36	Σ unsat.FA	81,97	52,42	67,05
<i>trans</i> -18:1	1,65	2,85	2,92				

All lipid fractions contained 17 fatty acids, with the total proportion of the unsaturated fatty acids 18:2 ω 6, 18:1 ω 9, and 18:3 ω 3 ranging from 29.94% to 79.08%. Notably, the *trans* isomer of 18:1 ω 9 was detected in all lipid fractions at concentrations ranging from 1.65% to 2.92%.

Acknowledgment. This research was carried out at the S.Y. Yunusov Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan, and was funded by the State Budget of the Republic of Uzbekistan.