

## BRIEF COMMUNICATIONS

### LIPIDS FROM SEEDS OF TWO SPECIES OF *Cousinia*

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Plants of the genus *Cousinia* (Asteraceae) dominate the cover of deserts and arid lands, providing the bulk of the feed crop [1].

We have previously studied lipids from *Cousinia severtzovii* seeds [2] and noted an elevated content (up to 6%) of free and acylated triterpenes that possess high biological activity [3, 4]. In the present communication we report results from studies of neutral (NL), glyco- (GL), and phospholipids (PL) from *C. umbrosa* Bge. and *C. aurea* Winkl seeds.

Ground seeds were treated with a  $\text{CHCl}_3$ — $\text{CH}_3\text{OH}$  (2:1 v/v) mixture to isolate the total NL, GL, and PL. The NL were separated from GL and PL by counter-current extraction [5]. The fraction enriched in GL and PL was separated into the individual classes using silica-gel column chromatography with elution by  $\text{CHCl}_3$  of the remaining NL; acetone, GL; and  $\text{CH}_3\text{OH}$ , PL. The PL were purified of carbohydrates on G-25 selective packing [6]. The lipid contents in the studied fractions were (% of seed mass):

	NL	GL	PL
<i>C.umbrosa</i>	18.9	1.9	1.3
<i>C.aurea</i>	15.3	1.6	1.1

TLC (silica gel) analysis of the NL using hexane—ether (8:2 and 1:1) solvent systems revealed the presence of ordinary triacylglycerides and hydroxy- and epoxyacylglycerides as the principal classes; hydrocarbons, triterpene alcohols, sterols, and mono- and diacylglycerides as minor components. The compounds were identified by comparison with model compounds and qualitative reactions.

According to TLC (silica gel) using  $\text{CHCl}_3$ —acetone— $\text{CH}_3\text{OH}$ —acetic acid— $\text{H}_2\text{O}$  (65:20:10:10:3), the total GL contain mainly sterolglycosides. Mono- and digalactosyldiacylglycerides, sterolglycoside esters, and unidentified GL are also present. The total PL consist of six components: phosphatidylcholines (PC), phosphatidylinosites (PI), N-acylphosphatidylethanolamines, lysophosphatidylcholines, and traces of phosphatidylethanolamines (PE). PC, PI, and PE usually dominate the PL in seeds of higher plants. The PE in the studied plants occur in trace quantities, which is atypical for PL of seeds.

Fatty acids of seed lipids are listed in Table 1.

The predominant fatty acids in all lipid classes are 16:0, 18:1, and 18:2. The NL and GL are the most unsaturated. The content of saturated fatty acids is elevated in PL of both species.

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TABLE 1. Fatty-Acid Composition of *C. umbrosa* and *C. aurea* Seeds, %, GLC.

Acid	<i>C. umbrosa</i>			<i>C. aurea</i>		
	NL	GL	PL	NL	GL	PL
12:0	0.2	0.6	1.7	0.1	1.1	Tr.
13:0	Tr.	Tr.	Tr.	Tr.	Tr.	Tr.
14:0	0.5	Tr.	1.9	0.5	1.7	1.5
15:0	-	Tr.	2.0	-	0.8	1.2
16:0	6.2	11.9	23.3	6.9	16.2	25.8
16:1	0.4	Tr.	Tr.	0.5	Tr.	Tr.
17:0	-	-	-	-	-	2.5
18:0	1.2	4.9	6.9	3.0	7.9	6.8
18:1	30.5	25.8	13.8	31.4	35.0	28.2
18:2	57.5	56.8	50.4	53.7	37.3	34.0
18:3	2.1	Tr.	Tr.	2.0	Tr.	Tr.
20:0	1.4	-	-	1.9	-	-
$\Sigma_{\text{sat}}$	9.5	17.4	35.8	12.4	27.7	37.8
$\Sigma_{\text{unsat}}$	90.5	82.6	64.2	87.6	72.3	62.2

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