

BRIEF COMMUNICATIONS

LIPIDS OF *Crambe kotschyana* AND *Megacarpaea gigantea* SEEDS

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Crambe kotschyana Boiss and *Megacarpaea gigantea* Rgl. are members of the Cruciferae family, which includes vegetables (cabbage, radish, etc.), oil-bearers (rape, camela, etc.), medicinals (erysimum, syrenia, etc.), spices (chinese mustard, horseradish, etc.), nectar-bearers, dyes, and other plant species [1].

Roots of both plants are edible if boiled. The aerial part provides feed for all types of livestock [2]. Furthermore, starch and alcohol are obtained from roots of *C. kotschyana*. Extract of *C. kotschyana* is used to treat congestion of respiratory pathways. An analogous extract from *Megacarpaea* possess insecticidal properties.

The most characteristic feature of plants of this family is the presence in them of long-chain acids with 20, 22, and 24 C atoms. These are mostly monoene acids, in particular, 22:1 acid (erucic). Up to 60% of the erucic acid occurs in oils of almost every third plant species [3].

The fatty-acid composition of *C. kotschyana* growing in the temperate zone has been reported [4]. Data for *M. gigantea* are lacking.

We investigated plants growing in Central Asia. We determined the yield of neutral lipids and their fatty-acid compositions and contents of principal lipid classes.

Ground seeds were extracted with benzene by repeated standing at room temperature. The lipid yields were 23.0% (*C. kotschyana*) and 19.3% (*M. gigantea*).

Fatty acids consisting of acyl-containing classes of neutral lipids were isolated by alkaline hydrolysis [5]. Their composition was established by GLC of the methyl esters on the polar phase 15% Reoplex 400 on Chromaton N-AW (Table 1).

Unsaturated acids 18:1, 18:2, 18:3, and 22:1 predominate in neutral lipids of both plants. The 22:1 acid dominates in neutral lipids of *C. kotschyana*, characteristic of cruciferae plants. However, the same *Crambe* species growing in Europe contains only 25.7% of this acid [4].

The content of principal lipid classes was established gravimetrically after separating the total neutral lipids by column chromatography over silica gel using a mixture of hexane—diethylether with gradually increasing concentration of ether from 0 to 50%. Monoacylglycerides were eluted by CHCl_3 .

Based on the results, the dominant components of neutral lipids from *C. kotschyana* and *M. gigantea* are triacylglycerides with ordinary fatty acids, 79.4 and 89.7%, respectively. Oxygenated triacylglycerides with triterpenols made up 8.6 and 5.9%; free fatty acids, 1.2 and 0.7%; diacylglycerides with sterols, 2.8 and 0.6%; unidentified components, 6.4 and 2.9%. The remaining insignificant fraction of lipids are hydrocarbons, esters of fatty acids and cyclic alcohols, and monoacylglycerides.

TABLE 1. Fatty Acids of Neutral Lipids of *C. kotschyana* (I) and *M. gigantea* (II).

Sample studied	Acid, % of mass*											
	12:0	14:0	15:0	16:0	16:1	17:0	18:0	18:1	18:2	18:3	20:0	22:1
I	Tr.	0.9	0.2	0.9	-	-	-	21.5	8.3	24.5	1.6	42.1
II	1.0	0.6	0.2	9.2	1.4	2.4	1.7	24.0	12.9	29.5	Tr.	17.1

*Traces of 22:0, 24:0, and 24:1 acids are present.

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