

BRIEF COMMUNICATIONS

TRIGLYCERIDE TYPES OF SEED OILS. I. CERTAIN CULTIVATED PLANTS OF THE SOLANACEAE FAMILY

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Most studies of plant oils usually present data for the fatty-acid composition in extracts of samples that are saponified by various methods. However, their triglyceride composition is calculated and not determined experimentally. HPLC can separate many triglyceride components, frequently even so-called "problem" triglycerides can be partially separated. One difficulty with the method is the complexity of calibrating the detector response for each triglyceride type since they are unavailable. However, it was found [1] that the use of correction coefficients for the sensitivity of a refractive-index detector using differences in the refraction coefficients of the eluent and calculated refraction coefficients of actual triglyceride types (from ACD Labs) gives reproducible data for oils of fundamentally different fatty-acid composition.

Table 1 contains results from this approach for determining the triglyceride composition of seed oils from certain plants of the Solanaceae family grown in Belgorod region in 2003. The triglyceride compositions, in contrast with seed oils of plants of the subfamily Prunoideae, were similar. The main component of the oils was linoleic acid (60-80 mol%). Oleic and palmitic acids were present in approximately equal amounts (9-12 mol%). The fraction of linolenic acid was less than 2% for tomato-seed oil and even smaller for the other oils.

The sample preparation and HPLC conditions have been described [2]. We used "rapid" eluent (10 vol% CH₃CN in acetone), in which the separation of several "problem" triglycerides was incomplete. Therefore, their sum is shown.

TABLE 1. Triglyceride Composition of Seed Oils of the Solanaceae Family

Triglyceride type	Mole fraction of triglyceride in oil, % ($\pm 0.1-0.5$)							
	<i>Physalis pubescens</i> L.	<i>Physalis ixocarpa</i> L.	<i>Capsicum annuum</i> L.		<i>Solanum melongena</i> L.	<i>Lycopersicon esculentum</i> Mill.	<i>Solanum nigrum</i> L. (garden nightshade)	<i>Nicotiana</i> sp.
			hot	sweet				
LnL ₂	0.5	0.4	0.3	0.9	1.5	2.5	1.2	2.2
L ₃ +LnLO	45.5	47.2	48.6	44.5	33.6	23.6	35.6	38.6
Ln ₂ P	0.4	0.2	0.2	1.0	1.4	1.6	1.2	1.0
L ₂ O	16.3	16.9	10.9	11.8	16.9	17.5	14.7	16.3
L ₂ P	21.1	19.6	28.0	24.0	17.2	18.7	19.3	17.6
LO ₂	3.1	4.5	1.8	2.7	7.1	6.9	3.8	5.3
L ₂ S+LOP	9.8	8.0	7.7	9.5	13.2	15.8	14.2	11.4
LP ₂	1.2	0.6	1.2	1.1	1.4	3.9	1.6	2.1
O ₃	0.5	0.3	0.1	0.6	0.8	1.7	0.4	0.8
LOS+O ₂ P	1.2	0.8	0.2	1.7	3.9	3.3	4.2	1.9
LPS+OP ₂	0.2	0.5	0.2	1.2	1.8	2.9	2.6	1.3
O ₂ S	0.1	0.1	0.1	0.2	0.1	0.7	0.2	0.3
Remainder	0.1	0.9	0.7	0.8	1.1	0.9	1.0	1.2

Acid radicals: Ln, α -linolenic; L, linoleic; O, oleic; P, palmitic; S, stearic.

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