

BRIEF COMMUNICATIONS

COMPOSITION OF THE TRIACYLGLYCEROLS OF *Amaranthus caudatus* SEEDS

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We have previously investigated the chemical composition of *Amaranthus caudatus* seed lipids and determined their carbohydrate components [1]. Continuing the study of this plant, we have now determined the composition of the triacylglycerols (TAGs) of the seeds by enzymatic hydrolysis with pancreatic lipase.

The TAGs were isolated from the lipids by column chromatography on silica gel. Part of the fraction was saponified with 10% potassium hydroxide solution and the mixture of fatty acids was liberated with 20% H₂SO₄ and was then methylated with diazomethane and its composition determined by GLC.

From the products of the hydrolysis of the TAGs the monoacylglycerols (MAGs) were obtained by PTLC [2], and the fatty acids were isolated from the latter.

Below we give the composition and levels of the fatty acids of the amaranth TAGs and MAGs, % (GLC):

Fraction	14:0	16:0	18:0	18:1	18:2	Σ_{unsat}	Σ_{sat}
TAGs	0.6	24.0	3.6	33.6	38.2	71.8	28.2
MAGs	1.0	6.8		31.8	60.4	92.2	7.8

As we see, with the presence in the TAGs of 71.8% of unsaturated and 28.2% of saturated acyls, more than 92% of the sn-2 positions of the TAGs were acylated with unsaturated acids and only 7.8% with saturated acids. Of the unsaturated acids, the middle position was occupied predominantly by linoleic acid. From these results, we calculated the position-species composition of the TAGs by Coleman's method (Table 1) [3]. The table includes 34 types of TAGs present in amounts greater than 0.1%, their total amounting to 97.9%.

Only 2.1% remained for other types of TAGs. In the majority of TAG molecules (90.5%), the sn-2 position was occupied by unsaturated acyls.

TABLE 1. Position-Species Composition* of the Triacylglycerols of *Amaranthus caudatus*

TAG	%	TAG	%	TAG	%	TAG	%	TAG	%
PPP	0.7	LPS	0.2	POLP	3.4	PLOL	13.7	LLL	3.8
PPSt	0.3	OLML	0.2	MLP	0.2	PLL	11.7	LOLOL	6.0
PMOL	0.2	OLPOL	0.8	PLP	6.5	LLM	0.2	LOLL	2.3
PML	0.2	OLPL	1.3	POLSt	1.1	OLOLSt	1.2	OLLOL	7.2
PPOL	1.5	LPL	0.5	StLSt	0.2	LOLSt	1.8	OLLL	11.3
PPL	1.2	PLSt	2.2	POLOL	3.6	LLSt	1.7	LLL	4.4
OLPSt	0.3	MOLP	0.2	POLL	5.6	StLOL	2.2		
SSS	1.0	SSU	3.6	USU	2.8	SUS	13.8	SUU	41.7
VVV	35.0								

*M) 14:0, P) 16:0, St: 18:0, OL) 18:1, L) 18:2, S) saturated, U) unsaturated.

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