The Hydrolysis of Long Chain Trisaturated Triglycerides by Pancreatic Lipase

An earlier report (1) from this laboratory described a rapid, semimicro technique which could be used for judging the purity of synthesized triglycerides. This technique was based on the action of pancreatic lipase at 40C. Therefore, its application to trisaturated glycerides was limited because lipase had decreased activity with higher melting solid substrates (2).

It seemed that the technique might be extended to the higher melting triglycerides by employing a low melting glyceride as carrier. The data in Table I show this to be the case. However, since highly pure fatty acid methyl esters were easier to obtain than pure triglycerides, it was found much more convenient to use the former for this purpose. The data indicate that methyl esters as well as triglycerides can be effective carriers for high melting substrates. Furthermore, no lessening in specificity of lipase for hydrolyzing terminal acids of triglycerides was observed. The use of methyl esters has the additional advantage that further analysis of monoglycerides isolated from hydrolysis products is not complicated by the presence of monoglycerides produced from the carrier.

TABLE I

Lipase Hydrolysis[a] of 1 Palmito-Distearin[b]

Carrier	Fatty acid composition, mol %			
	MG		FA	
	16:0	18:0	16:0	18:0
Triolein	2[c]	98[c]	49[c]	51[c]
Methyl oleate	1	99	48[c]	52[c]
Methyl pentadecanoate	2	98	50[d]	50[d]

[a] 5 min reaction time; other conditions as described (1). Ca 15 mg carrier, 35 mg triglyc. were used.
[b] Composition of PSS: 33.3 mol % 16:0, 66.7 mol % 18:0.
[c] 18:1 from carrier ignored in calc.
[d] 15:0 from carrier ignored in calc.

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