• *Short Communication*

The Determination of Sorbitan Monostearate

The published method for determining sorbitan monostearate in cake mixes and baked cakes by gas chromatography (1) depends on a constant proportion of isosorbide (1,4:3,6-dianhydrosorbitol) being obtained on saponification. The average yield of isosorbide from eight batches of sorbitan monostearate was reported to be 4.88%, with an average deviation from this figure of 0.15%. Work in this laboratory has shown that the percentage yield of isosorbide varies with supplier and that the method cannot be used quantitatively unless the source of the sorbitan monostearate is known. Samples from five United Kingdom suppliers were saponified as previously (1), but in this case arachidic alcohol was used as an internal standard for the gas chromatographic measurements. The results shown in Table I clearly indicate the wide variation of percentage yield possible.

TABLE I
Comparison of Sorbitan Monostearate Samples

Supplier	Per cent isosorbide yield	Average per cent isosorbide yield
P	4.2	4.2
	4.4	
	4.2	
	4.3	
	4.1	
Q	5.4	5.5
	5.5	
	5.6	
	5.3	
	5.5	
R	5.9	6.0
	6.0	
	5.9	
	6.2	
	6.1	
S	1.3	1.2
	1.2	
	1.2	
	1.1	
	1.1	
T	6.1	6.1
	6.5	
	6.0	
	6.0	
	6.1	

We have found that sorbitan esters in general produce isosorbide on saponification, the yields from those of one supplier varying from 1.5% to 15%. Hence the published method (1) could presumably be used for the determination of other sorbitan esters, provided their source is known. We have also found that the method is suitable for the qualitative analysis of sorbitan monostearate in dessert topping and ice cream powders. As a further means of identification, the isosorbide can be silylated (2) and then gas chromatographed as its trimethylsilyl derivative on a 6 ft 3% SE-30 column at 160 C.

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[Received March 6, 1969]