Waters
Lab Highlights
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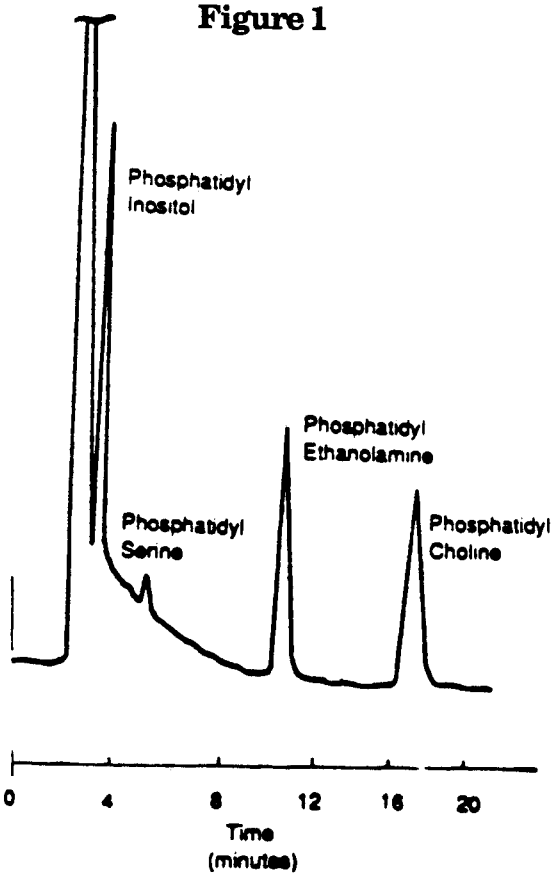
Phospholipid Analysis in Soy Lecithin By LC Using a μPorasil™ Column

Soy lecithin is a commonly used emulsifier in the manufacture of confectionery and other foodstuffs [1]. This soy lecithin is composed of a variety of phospholipids, each with a different acyl chain and polar head groups. Current procedures for analysis of phospholipids is restricted to TLC [2], however, a recent LC method has been described for analyzing the four major phospholipids found in soy lecithin [1].

The LC method used a 3.9mm X 30cm μPorasil™ column with a mobile phase of 780/10/9 (v/v/v) CH_3CN/CH_3OH/85% H_3PO_4 flowing at 2.0 mL/min. UV detection was monitored at 205 nm. Figure 1 shows a chromatogram of soy lecithin extract with the four major phospholipids it contains. Confirmation of the peaks in this sample was done by scanning each peak with a UV detector and comparing with authentic standards.

Figure 1



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Samples of soy lecithin containing varying amounts of phospholipids were analyzed and typical compositions are shown in Table I. Precision studies were conducted using both standard solutions and extracts of soy lecithin. These data are summarized in Table II.

Table I: Typical Phospholipid Composition of Various Soy Lecithins (% Composition)

Description	Phosphatidyl Inositol	Phosphatidyl Serine	Phosphatidyl Ethanolamine	Phosphatidyl Choline
Soy lecithin I	11.6	N.D.	12.2	11.3
Soy lecithin II	4.4	N.D.	13.3	11.2
Soy lecithin III	21.3	N.D.	6.4	16.4

N.D. = NOT DETECTABLE; N=2

TABLE II: Sample Precision Study

Phospholipid	Conc(μg)	%CV
Phosphatidyl inositol	2	4.3
Phosphatidyl serine	2	3.9
Phosphatidyl ethanolamine	2	2.4
Phosphatidyl choline	2	3.8

The authors report [1] that lower limits of detection varied from 100ng/injection for phosphatidyl serine to 350ng/injection for phosphatidyl choline. All of the phosphatides exhibited excellent linearity with regression coefficients of 0.98-0.99 over a 100-fold range.

The LC method described for the determination of phospholipids in soy lecithin is rapid and precise. Work is continuing in the authors' laboratory to apply this method to the major phospholipids in chocolate.

1. Hurst, W. J.; Martin, Jr., R. A., JAOCS, 61:1462 (1984).
2. Diffenbacher, A.; Bracco, U., JAOCS, 55:642 (1978).