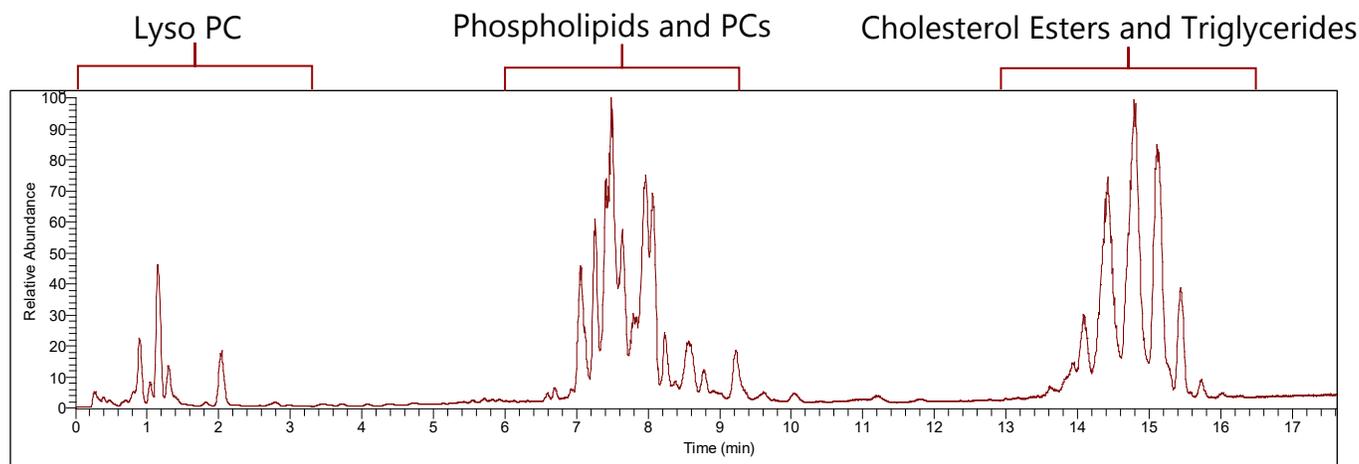EVOSPHERE

Lipidomics Study

In this study, we demonstrate the advantages of utilizing the monodisperse fully porous particle column in the study of lipids and lipid classes. We collected data on 5 classes of lipids— lysophosphotidylcholines, phospholipids, phosphotidylcholines, cholesterol esters, and various triglycerides.

Experimental Conditions

		Time	%B
Instrument:	Thermo Q-Exactive with Dionex UHPLC pump	1 min	20
		3 min	30
Column:	Evosphere C12, 100 Å, 3 µm, 2.1 x 50 mm Monodisperse Particle Column	4 min	45
		6 min	60
PN#:	EVO12020303	8 min	65
Mobile Phase A:	60/40 ACN/H2O with 0.1% FA and 10 mM NH_4HCO_2	10 min	65
		15 min	90
Mobile Phase B:	90/8/2 IPA/ACN/ H2O with 0.1% FA and 10mM NH_4HCO_2	17 min	98
Flow Rate:	500 µL/min	18 min	98
Temp:	50 °C		

Lyso PC — Phospholipids and PCs — Cholesterol Esters and Triglycerides

In typical lipid LC methods, the mobile phase contains a significant percentage of IPA (isopropyl alcohol), due to the hydrophobic nature of the specific lipid classes. This allows the lipids to partition in and out of the stationary phase to effectively improve chromatographic performance.
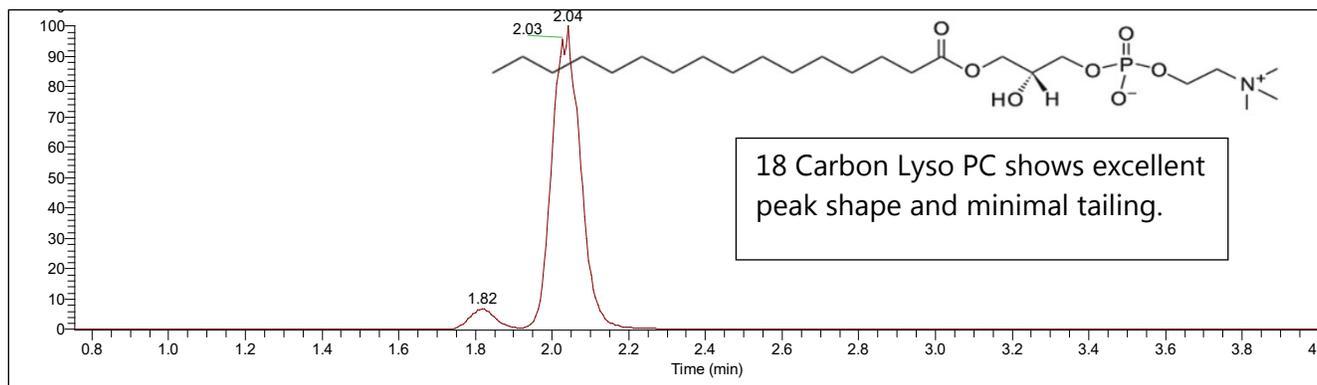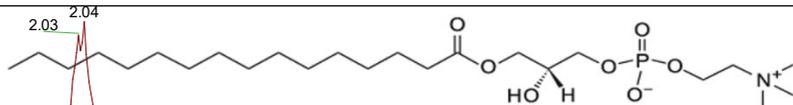
Evosphere C12 was chosen for this study because the C12 ligand provides a strong hydrophobic environment to retain and discriminate different lipid species from each other.

The 3 μm particle was chosen to show the power of the monodisperse fully porous particle material, as it delivers UHPLC performance at half sub-2 μm typical back pressures. Further, IPA is more viscous than typical ACN/H_2O mobile phase mixtures, thus a larger highly efficient particle becomes even more appropriate to ensure lipid characterization is not limited by system pressure.
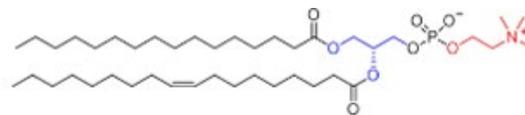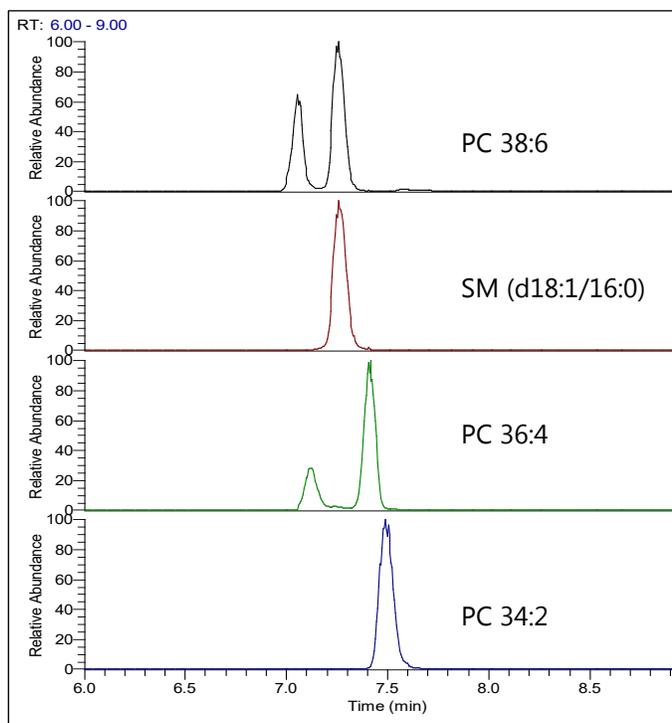
Lyso PC 16:0

16 Carbon Lyso PC shows excellent peak shape and minimal tailing.
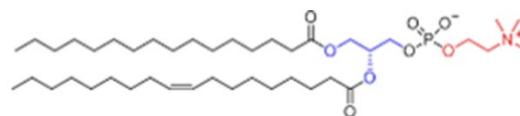
Lyso PC 18:0

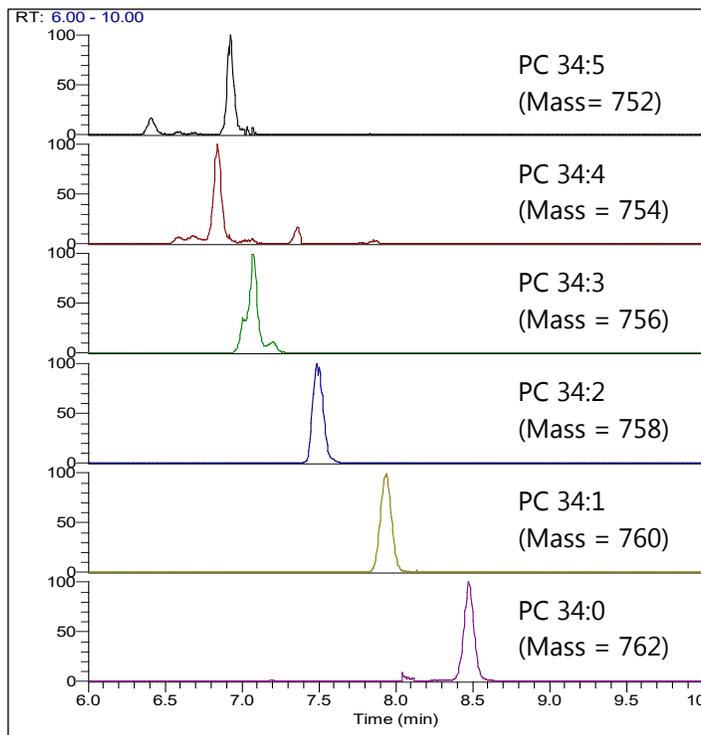18 Carbon Lyso PC shows excellent peak shape and minimal tailing.
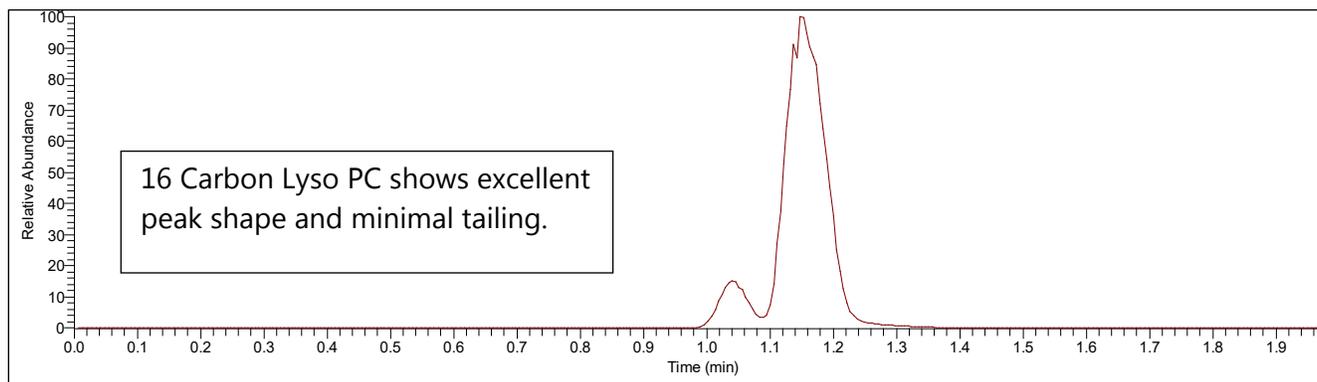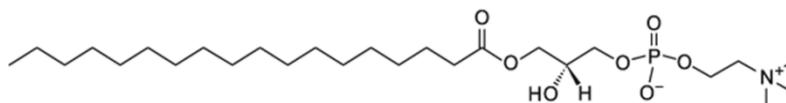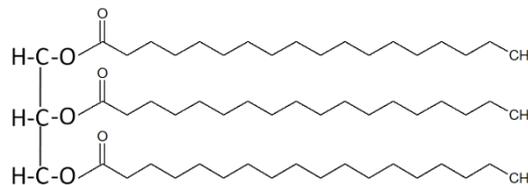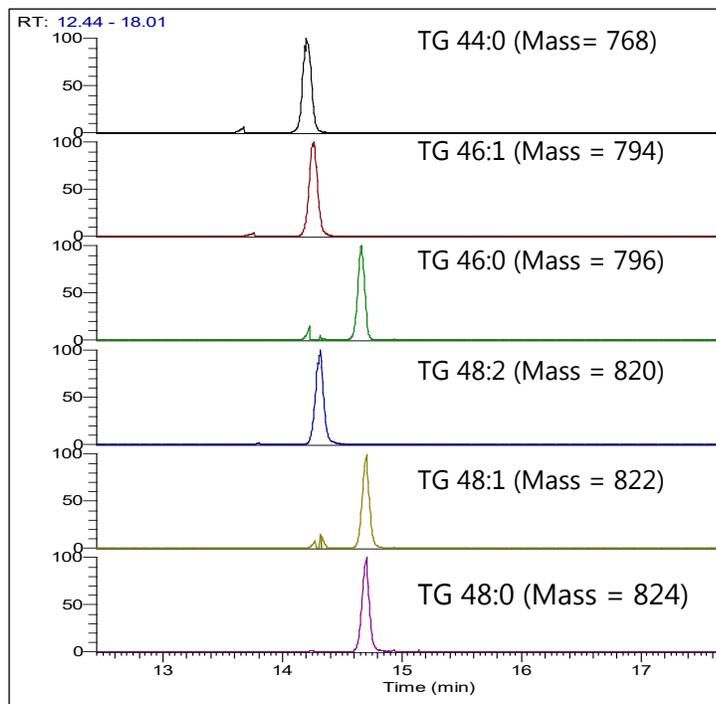
Phospholipids

Phospholipids show higher intensity peaks.
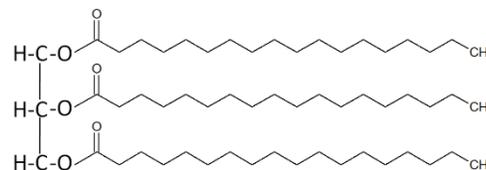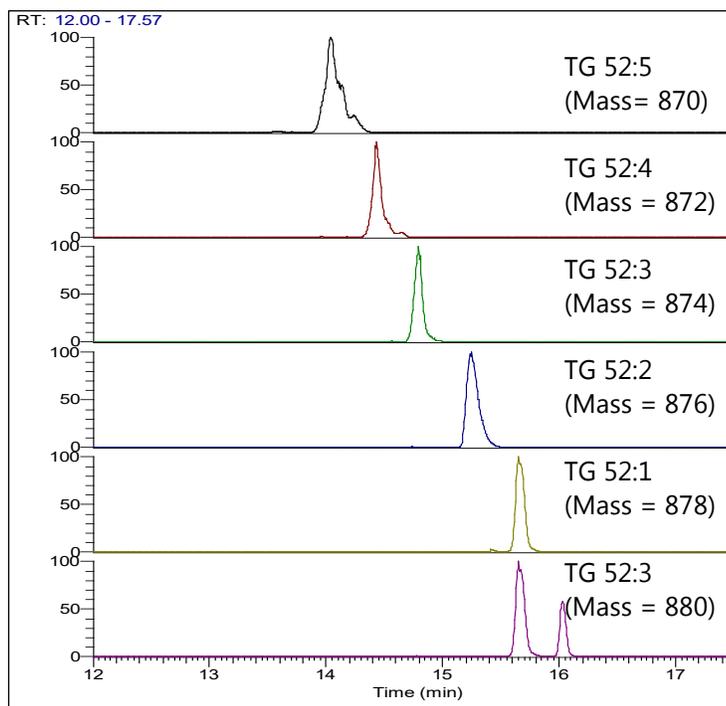
PCs with Different Degrees of Unsaturation

Phosphotidylcholine is able to separate different degrees of unsaturation.
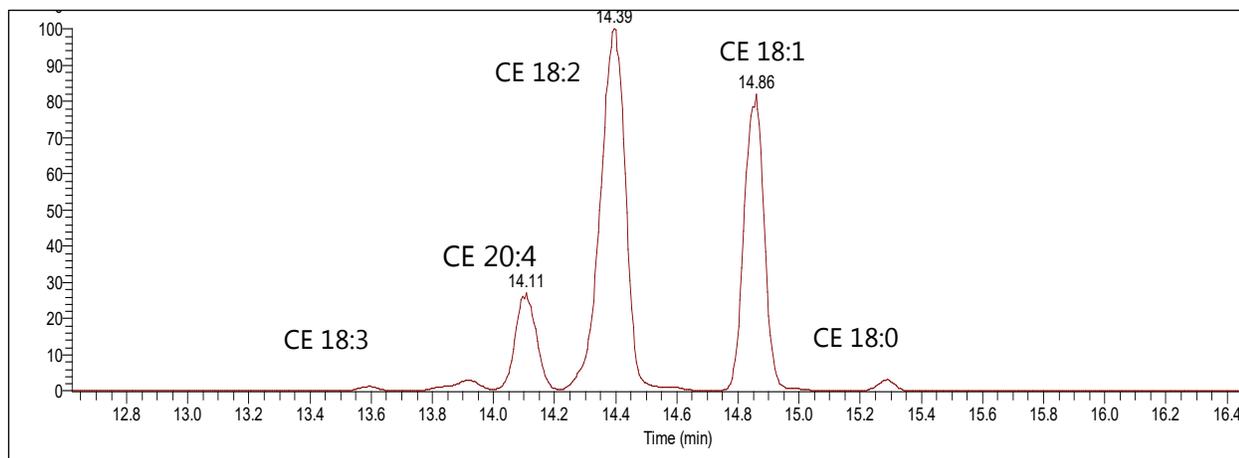
Triglycerides with 44-48 Carbons

Triglycerides with different degrees of saturation are well separated with excellent peak shapes as compared to traditional methods.
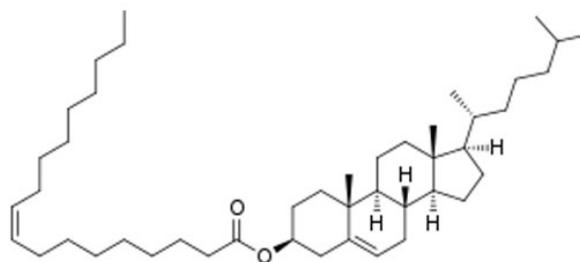
Triglycerides with 52 Carbons

Cholesterol Esters

Cholesterol Esters are separated with excellent peak shapes as compared to traditional methods.

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