Phosphatidylcholine or Triacylglycerol: Which One is the Most Resistant to Oxidation?

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Soy lecithin, mainly made of phospholipids (PL), is widely used in the food industry as emulsifier or smoothing agent in chocolate, margarines, mayonnaise and instant products. In addition to their technological properties, PL present a nutritional interest, as better fatty acids carriers compared to triacylglycerols (TG) (1;2). Heat-induced oxidative modifications of phosphatidylcholine (PC) or phosphatidylethanolamine (PE) molecular species were evaluated and compared with the corresponding TG.

The behaviour of oleic acid was evaluated when esterified in TG and in PC. The monitoring of the oxidative degradation using LC-MS showed that oleic acid is less likely to be oxidized when in the form of PC than when in the form of TG. In addition, oxidation products from PC were more stable than those from TG. This finding strengthens the idea that the polar head group in PC and PE increases the stability of fatty acids to oxidation in comparison with TG.