



## The Faculty of Biotechnology and Food Engineering

### Thought for food and food for thought Special seminar

**Prof. Eric A. Decker**

## The Prooxidative and Antioxidative Role of Phospholipids in Different Food Systems

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### Abstract

Phospholipids are important minor components in edible oil that play a role in lipid oxidation however whether they are antioxidative or prooxidative is often controversial. The phospholipids in the cell membranes of meat are the main lipid oxidized during storage so they can be considered prooxidative. Surface active phospholipids have intermediate hydrophilic-lipophilic balance values and can form association colloids in bulk oil. These association colloids are prooxidative since they create lipid-water interfaces where hydroperoxides and prooxidants interact with fatty acids. Phosphatidylethanolamine and phosphatidylserine have been shown to inhibit lipid oxidation in the presence of tocopherols by regenerating oxidized tocopherols back into effective free radical scavenging antioxidants. The ability of phospholipids to enhance the activity of tocopherols is dependent on the tocopherol homolog type, phospholipid type and the type of food system. Phosphatidylethanolamine utilization to inhibit lipid oxidation in food is limited by the high cost of purified compounds and by its low concentrations in most commercial lecithins. However, phospholipase D can be used to modify lecithin by converting phosphatidylcholine to phosphatidylethanolamine in the presence of ethanolamine. This modified lecithin is able to enhance the antioxidant activity of tocopherol.

**Wednesday, 13/5/2020, 15:00 – 16:00, Via zoom**  
**Meeting ID: 938 7949 4849**