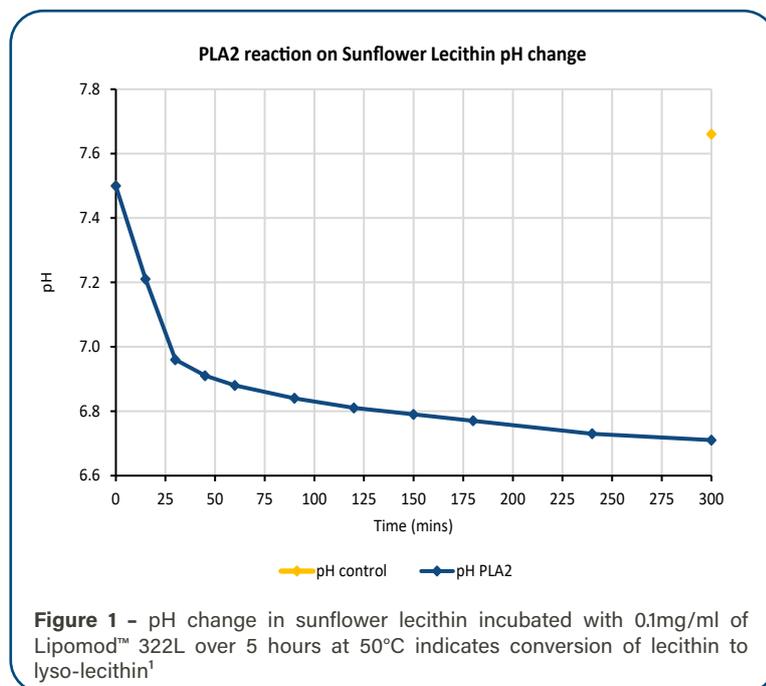


# Enzymatic Processing of Sunflower Lecithin: Formation and Functionality of Lyso-Lecithin

## pH Drop as an Indicator of Lyso-Lecithin Formation

This document presents an analysis of the enzymatic hydrolysis of sunflower lecithin using phospholipase A2 (PLA2). When PLA2 is introduced, it catalyses the hydrolysis of the sn-2 fatty acid from phosphatidylcholine, the major phospholipid component of sunflower lecithin. This targeted reaction produces lysophosphatidylcholine (lyso-lecithin) and free fatty acids, resulting in a progressive drop in pH during incubation a clear indicator of enzymatic activity and lyso-lecithin formation, as demonstrated in Figure 1.

As PLA2 acts on sunflower lecithin, the release of free fatty acids leads to a measurable decline in pH, shown in Figure 1. This downward trend is a reliable indicator of ongoing hydrolysis, confirming the conversion of native phospholipids into lyso-lecithin. The pH shift can be monitored in real time, providing a practical tool for validating enzyme activity during process development or scale-up.



Sunflower-derived lyso-lecithin offers enhanced emulsification, improved solubility, and greater bioavailability compared to native lecithin, making it a high-value functional ingredient. Its increased hydrophilicity allows for more efficient oil-in-water emulsions at reduced inclusion levels, improving formulation performance in food, feed, and nutraceutical systems. In animal nutrition, it supports better lipid digestion and energy uptake. As a non-GMO, soy-free alternative produced via enzymatic, solvent-free processing, sunflower lyso-lecithin aligns with clean-label requirements and regulatory demands, making it ideally suited for allergen-conscious and natural product formulations. Its enhanced functionality across a wide range of systems makes it a versatile, performance-driven solution for many ingredient formulators seeking both efficacy and process efficiency.

<sup>1</sup> M.M. El-Abhar, G.I. Mahmoud, E.A. Hanafy, M.M. El-Mallah, S.M. El-Shami (2020) Comparative Study of Modified Soy Lecithins as Oil in Water Emulsions

### Your Vision, Our Expertise: Partnering for optimal solutions

Looking to get more value from your oils or lecithin streams? Our application specialists can help you optimise enzyme performance in oil and lecithin processing. Whether you're working with sunflower, soy, or other vegetable oils, or need solutions aligned to specific process parameters, we'll tailor enzyme strategies to meet your goals. Partner with us to improve yield, functionality, and process efficiency, and turn your vision into measurable results.

