

PHOSAL® H 50 | Natural Phospholipids



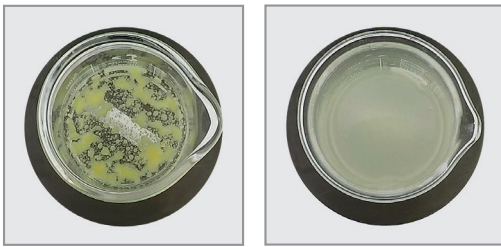
Liquid Phospholipids  
Derived from Sunflower

We Invest in Quality.

# PHOSAL®: Lipoid's Unique Formulations of Phosphatidylcholine

## The Natural All-Rounder

Lipoid's PHOSAL® H 50 is a liquid formulation of purified phosphatidylcholine (PC) and oil [1] from 100 % sunflower. This unique, pure and natural liquid formulation can serve as solubilizer for lipophilic actives and can help to disperse lipid phases into aqueous systems by forming emulsion droplets (Fig. 1).



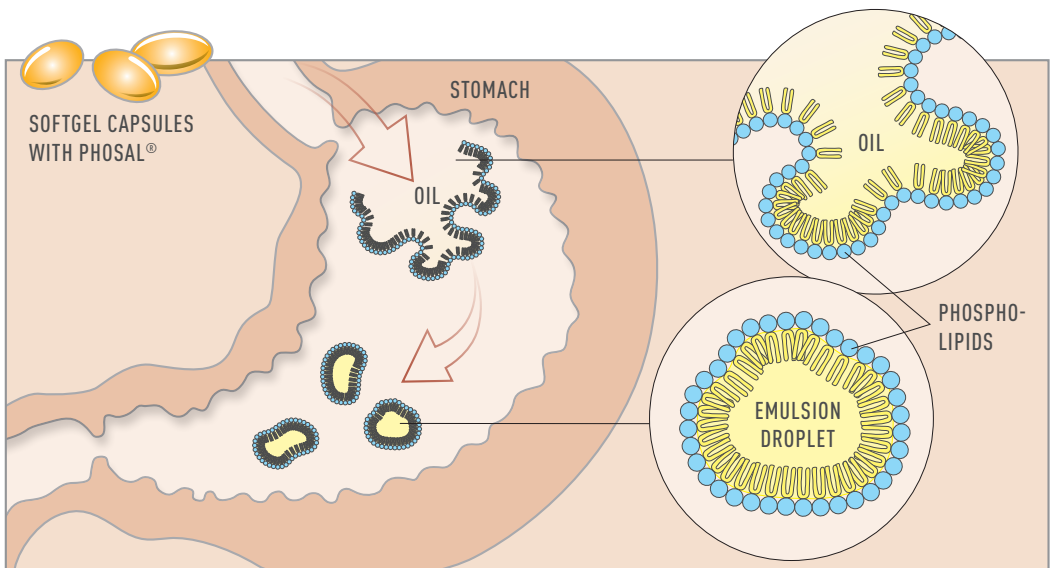
*Fig. 1: Use of PHOSAL® H 50 to emulsify dietetic oils  
Left: Pure fish oil in water. Right: mixture of 70 % fish oil and 30 % PHOSAL® H 50 mixed with water forming emulsion droplets. [QR code to the video on the last page.]*

In addition, the natural unsaturated phospholipids show various health benefits, including improving fat digestion, [2] and are beneficial for colon [3] and liver health [4]. Moreover, PC serves as the main natural dietary source of choline [5] [6].

## Increased Bioavailability

Phosphatidylcholine, the major phospholipid of bile, contributes physiologically to the digestion and absorption of fats and lipophilic nutrients.

During digestion, PC together with bile salts emulsifies these fatty components into an emulsion of small fat droplets (Fig. 2). This leads to a larger surface area of the oil phase and therefore to a much better absorption and enhanced bioavailability of the oil and the components dissolved therein [7] [8] [9].



*Fig. 2: Schematic illustration of emulsion-forming properties by PHOSAL® formulations.*

PRODUCT	DESCRIPTION	PROPERTIES
<b>PHOSAL® H 50</b>	50 % Phosphatidylcholine (w/w) from sunflower (non-GMO) in sunflower oil	Yellow to light-brown, viscous liquid with n.m.t. 5 % ethanol

### Additional Benefits of PHOSAL®

PHOSAL® H 50 represents an innovative liquid formulation able to increase the solubility of poorly soluble actives and consequently enhance their bioavailability. The formulation is, in addition to its use as emulsifier, suitable for the formulation of

a wide range of lipophilic actives, see table below.

PHOSAL® H 50 can be used in soft and hard shell capsules or as emulsifier in aqueous systems.

<b>NATURAL EMULSIFIER</b>	<b>EASY TO HANDLE</b>	<b>NATURAL SOURCE OF CHOLINE</b>
---------------------------	-----------------------	----------------------------------

### Solubilities: Active Compatibility

	Astaxanthin	Coenzyme Q10	$\alpha$ -Lipoic acid	Lutein	Melatonin	Resveratrol	Riboflavin	CBD oil
<b>PHOSAL® H 50</b>	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓	✓✓	✓✓✓

✓✓✓ = High Compatibility

✓✓ = Moderate Compatibility

✓ = Low Compatibility



## Regulatory

Safety	We affirm that the product is safe and suitable for the intended use.
Vegan	The product is declared vegan.
Non-GMO	The product meets the non-GMO standards set by Regulation (EC) No. 1829/2003.
Non-allergenic	The product is produced from 100 % sunflower.



NON-GMO



VEGAN



NO PALM OIL



NO ALLERGENS

## References

- [1] Van Hoogevest, P., Non-aqueous phospholipid concentrates for increasing the bioavailability of poorly soluble compounds. *European Journal of Lipid Science and Technology* 122(6), 1900411 (2020).
- [2] Borgström, B., Importance of phospholipids, pancreatic phospholipase A2, and fatty acid for the digestion of dietary fat: in vitro experiments with the porcine enzymes. *Gastroenterology* 78(5), 954 - 962 (1980).
- [3] Stremmel, W., Merle, U., et al., Therapy of ulcerative colitis with phosphatidylcholine - underlying concept and clinical efficacy. *Abstract Book: New treatment target in gut and liver diseases. Symposium 2015 - Lucern* 21, 51 - 52 (22.10.2016).
- [4] Gundermann, K-J., Gundermann, S., et al., Essential phospholipids in fatty liver: a scientific update. *Clinical and Experimental Gastroenterology* 9, 105 - 117 (2016).
- [5] Leermakers, E., Moreira, E., et al., Effects of choline on health across the life course: a systematic review. *Nutrition Reviews* 73, 500 - 522 (2015).
- [6] Sanders, L., Zeisel, S., et al., Choline: dietary requirements and role in brain development. *Nutrition Today* 42, 181 - 186 (2007).
- [7] Allam, A., Komeil, I., et al., Preparation, characterization and in vivo evaluation of curcumin self-nano phospholipid dispersion as an approach to enhance oral bioavailability. *International Journal of Pharmaceutics* 489(1 - 2), 117 - 123 (2015).
- [8] Gebhardt, P., Van Hoogevest, P., et al. et al., A liquid phospholipid formulation of a curcumin extract with high concentration of phosphatidylcholine (PHOSAL® Curcumin) improves the transport of curcuminoids across Caco-2 intestinal epithelial cells. *Agro Food Industry Hi Tech* 30(4), 56 - 59 (2019).
- [9] Shanmugam, S., Park, J.-H., et al., Enhanced bioavailability and retinal accumulation of lutein from self-emulsifying phospholipid suspension (SEPS). *International Journal of Pharmaceutics* 412(1 - 2), 99 - 105 (2011).

### Video

Showing the dispersability of fishoil in water without/with PHOSAL® H 50



Lipoid GmbH  
Frigenstr. 4  
67065 Ludwigshafen  
GERMANY

Phone: +49 621 - 5 38 19-0

info@lipoid.com

[www.Lipoid.com](http://www.Lipoid.com)



CERTIFIED



NATURAL &  
SUSTAINABLE



REUSAGE  
OF WASTE

Representatives in many other countries.

Disclaimer: All data and recommendations made herein are based on our present state of knowledge. We disclaim any liability for risks that may result from the use of our products, including improper and illicit use. Product properties identified and highlighted by specific tests or studies are to be interpreted in the context of the test/study conditions only. The listed properties of products without claim data have been sourced from literature and should be used as value-added information only. Please be aware that the use of any claim is the sole responsibility of the customer and is regulated by your local Regulatory Body.

© Lipoid GmbH