

PHOSAL® H 50
PHOSAL® P 50

Active Ingredient
and Bioavailability Enhancer

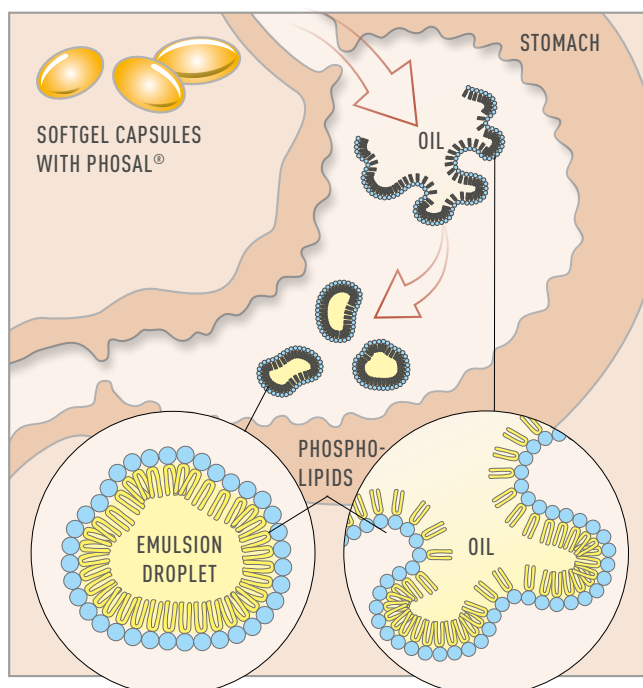


PHOSAL® – The Natural All-Rounder

Lipoid's PHOSAL® products are innovative liquid formulations made from highly purified phosphatidylcholine (PC) combined with plant derived oils. They offer high PC concentrations in an easy to use

liquid format. PHOSAL® is available from sunflower (PHOSAL® H 50) and from non-GMO soybean (PHOSAL® P 50).

PHOSAL® H 50				
50 % phosphatidylcholine in sunflower oil	Sunflower	Phosphatidylcholine from sunflower (non-GMO), sunflower oil, ethanol, sunflower oil fatty acids, natural mixed tocopherols, ascorbyl palmitate	• Active Ingredient • Formulation Enhancer • Ready-to-Fill	
				
PHOSAL® P 50				
50 % phosphatidylcholine in MCT	Non-GMO Soybean	Phosphatidylcholine from non-GMO soybean, medium-chain triglycerides, ethanol, natural mixed tocopherols, ascorbyl palmitate	• Active Ingredient • Formulation Enhancer • Ready-to-Fill	
				



PHOSAL® as a Bioavailability Enhancer

PHOSAL® improves the solubility of poorly soluble actives and can therefore enhance their bioavailability^[1].

Phosphatidylcholine, a major component of bile, naturally supports the digestion and absorption of fats and lipophilic nutrients. Together with bile salts, PC forms fine emulsions that increase the surface area of fat droplets^[2] – leading to improved absorption and higher bioavailability of lipids and lipid soluble compounds.

Fig. 1: Schematic illustration of emulsion-forming properties by PHOSAL® formulations.

PHOSAL® as an Active Ingredient

PHOSAL® provides high levels of phosphatidylcholine (PC), the most important natural dietary source of choline^[3]. Beyond choline supply, PC rich phospholipids are essential structural components of all biological membranes and support a wide range of physiological functions.

Phosphatidylcholine plays a central role in liver and cardiovascular health: it stabilizes cell membranes, supports fat metabolism, and contributes to the transport of fats and cholesterol^[4-6].

In the gastrointestinal tract, PC contributes to the integrity of the epithelial barrier and is recognized as innovative gut health ingredient^[7].

As a natural source of choline, phosphatidylcholine serves as a key precursor of the neurotransmitter acetylcholine, which is essential for memory, concentration, and neural signal transmission^[3].

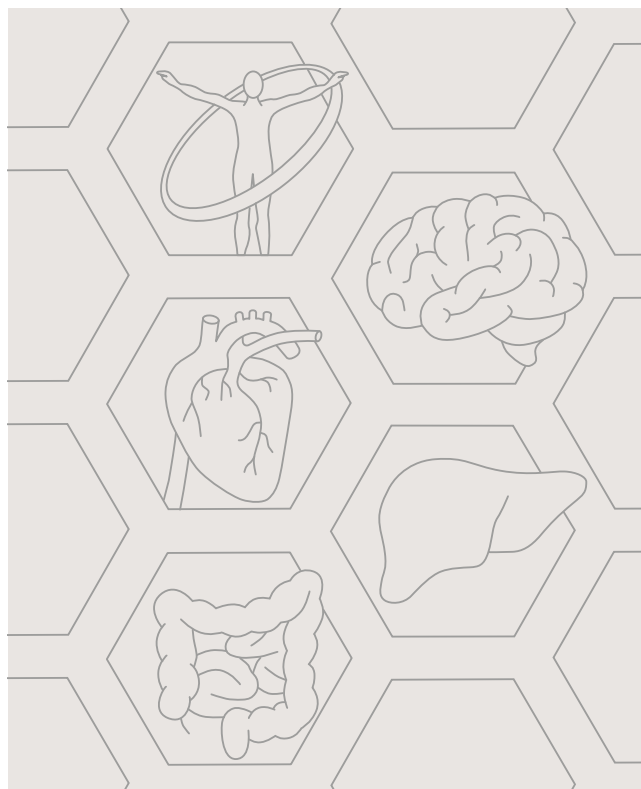


Fig. 2: Phosphatidylcholine plays an important role in supporting organs and maintaining healthy body functions.

**NATURAL BIOAVAILABILITY
ENHANCER**

**NATURAL SOURCE
OF CHOLINE**

**EASY
TO HANDLE**



Fig. 3: 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.

Applications

PHOSAL® can be used in:

- Soft and hard capsules
- Liquid lipid formulations
- Aqueous systems as an emulsifier

PHOSAL® H 50 and PHOSAL® P 50 serve as a source of choline and can be used both as emulsifiers and to stabilize liquid formulations.

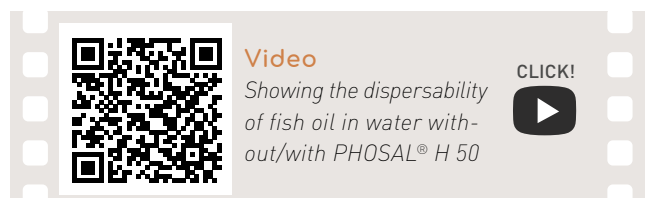
Regulatory *(Further regulatory data upon request)*

Vegan	The product can be declared as vegan.
Non-GMO	The product meets the non-GMO standards set by Regulation (EC) No. 1829/2003.
Palm Oil Free	The product does not contain palm oil.
Lactose/Gluten Free	The product does not contain lactose or gluten.
Manufacturing	The product is manufactured in Germany.



References *(Additional references upon request)*

- [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] Leermakers, E., Moreira, E., *et al.*, Effects of choline on health across the life course: a systematic review. *Nutrition Reviews* 73, 500 – 522 [2015].
- [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] Sahebkar, A., Fat lowers fat: Purified phospholipids as emerging therapies for dyslipidemia. *Biochimica et Biophysica Acta* 1831(4), 887 – 893 [2013].
- [6] Wojcicki, J., Pawlik, A., *et al.*, Clinical evaluation of lecithin as lipid-lowering agent. *Phytotherapy Research* 9(8), 597 – 599 [1995].
- [7] Braun, A., Stremmel, W., *et al.*, The role of phospholipids within the intestinal mucosal barrier. *Zeitschrift für Gastroenterologie* 49(10), A11 [2011].



Lipoid GmbH
Frigenstr. 4
67065 Ludwigshafen
GERMANY
Phone: +49 621 5 38 19-0
hello@lipoid-nutrition.com
www.lipoid-nutrition.com



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

