

ROMEGA

Romega® from Norwegian Herring Caviar

A sophisticated source of important nutrients, Romega® is sourced from Norwegian herring caught in MSC-certified fisheries and produced using a patented process that gently separates the protein and lipids in herring caviar. Romega® herring caviar is a premium omega-3 source for consumers who want only the very best for their health.



BRAIN



DHA is the main essential omega-3 fatty acid in the human brain and it is critical for normal brain development in children and maintaining normal brain functions of adults. Romega® is a unique omega-3 phospholipid source with a ratio of DHA:EPA of 3:1. Romega® also contains Lyso-phosphatidylcholine, which has been shown to deliver DHA to the receptors of the blood/brain barrier, where it is then actively transported into the brain (ref.*1).

INFLAMMATION



Romega® has confirmed natural abundance of Specialized Pro-Resolving Mediators and their precursors (SPMs). SPMs are important fat molecules involved in the adjustment of inflammation, due to the highly potent (pg-ng range) endogenous signaling metabolites from the ω -3 PUFA . (ref.*2).

CELLULAR HEALTH & AGING



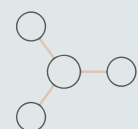
Cellular nutrition is an emerging category where the idea of healthy aging is being viewed through a different lens. In today's healthy aging market, it is no longer just about what you see as the signs of aging, but more importantly, what you can't see. The membrane-friendly phospholipids of Romega® plays a key role as a building block in the cellular membrane of the human body (ref.*3).

PRENATAL & MATERNAL HEALTH



Omega-3 DHA and choline are foundational nutrients that are important before, during and after pregnancy. It is known that daily intake of DHA and choline during pregnancy supports normal brain and eye development. The DHA in breast milk is typically most abundant in the phospholipid form, so it is an advantage for mom to get DHA in the membrane-friendly delivery format that mother nature prefers. Daily intake of Romega® during pregnancy contributes to the normal brain development of the fetus and breastfed infants (ref.*4).

SPORTS NUTRITION

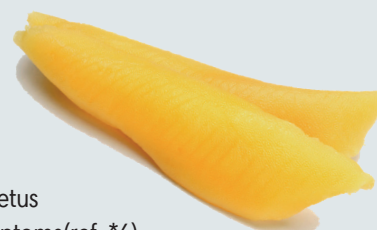


The multiple SPMs of Romega® also ensures involvement in resolution of post-workout inflammation (muscle soreness) without any side effects (ref. *5).

EYES



DHA contributes to the normal vision development in both fetus and infants. O-3 phospholipids may also reduce dry eye symptoms(ref. *6) and prevent or delay development of age-related macular degeneration(ref. *7) and sight-threatening diabetic retinopathy(ref. *8)



ROMEGA

- PHOSPHOLIPID-BOUND DHA & EPA
- SUSTAINABLY SOURCED
- UNIQUE 3:1 DHA:EPA RATIO
- NATURAL SOURCE OF SPMS & THEIR PRECURSORS
- INCREASED BIOAVAILABILITY
- BIO-EFFICIENT
- RICH IN CHOLINE
- PURE
- CONTAINS NATURAL VITAMIN D
- NO FISHY AFTERTASTE
- MEMBRANE-FRIENDLY PHOSPHOLIPIDS



NUTRITIONAL FACTS	UNIT	ACCEPTANCE CRITERION		
Appearance Solubility		Amber viscous oil - Oil soluble and water dispersible		
		Minimum	Maximum	Typical
EPA (C20:5 n-3)	Area %	11		
DHA (C22:6 n-3)	Area %	40		
Total Omega-3	Area %	60		
EPA (C20:5 n-3)	mg/g	90		
DHA (C22:6 n-3)	mg/g	310		
Total Omega-3	mg/g	450		
Total phospholipids, of which	mg/g	300		
Phosphatidylcholine (PC)	mg/g	255		
Phosphatidylinositol (PI)	mg/g			8
Phosphatidylserine (PS)	mg/g			1
Phosphatidylethanolamine (PE)	mg/g			26
Sphingomyelin (SPH)	mg/g			10
Total neutral lipids	mg/g		700	
Choline	mg/g			40
Sum of 14-HDHA, 17-HDHA, 18-HEPE	µg/g			150
Specialized Pro-Resolving Mediators (SPMs):				
Maresins (MaR1, MaR2)	µg/g	Report value		
D-series Resolvin RvD5	µg/g	Report value		
E-series Resolvin RvE2	µg/g	Report value		
Protectin DX (NPDx)	µg/g	Report value		



Company information

Arctic Bioscience is a Norwegian biotechnology company developing products the world has never seen before. Located in Ørsta on the west coast of Norway, the Arctic Bioscience team has developed marine ingredients for nutraceutical and pharmaceutical applications for more than 20 years.

www.arctic-bioscience.com | www.herringscaviarextracts.com

Disclaimer:

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List of references:
Brain health *1 - Hachem M, Nacir H. Emerging Role of Phospholipids and Lysophospholipids for Improving Brain Docosahexaenoic Acid as Potential Preventive and Therapeutic Strategies for Neurological Diseases. *Int J Mol Sci.* 2022 Apr 2;23(7):3969. doi: 10.3390/ijms23073969. PMID: 35409331; PMCID: PMC9000073.
Inflammation *2 - Valente, M.; Dentoni, M.; Bellizzi, F.; Kuris, F.; Gigli, G.L. Specialized Pro-Resolving Mediators in Neuroinflammation: Overview of Studies and Perspectives of Clinical Applications. *Molecules* 2022, 27, 4836. <https://doi.org/10.3390/molecules27154836>
Cellular health and ageing *3 - Küllenberg D, Taylor LA, Schneider M, Massing U. Health effects of dietary phospholipids. *Lipids Health Dis.* 2012 Jan 5;11:3. doi: 10.1186/1476-511X-11-3. PMID: 22221489; PMCID: PMC3316137.
Prenatal and maternal health *4 - Mulder, K., Elango, R., & Innis, S. (2018). Fetal DHA inadequacy and the impact on child neurodevelopment: A follow-up of a randomised trial of maternal DHA supplementation in pregnancy. *British Journal of Nutrition*, 119(3), 271-279. doi:10.1017/S0007114517003531
Sports nutrition *5 - VanDusseldorp TA, Escobar KA, Johnson KE, Stratton MT, Moriarty T, Kerkick CM, Mangine GT, Holmes AJ, Lee M, Endito MR, Mermier CM. Impact of Varying Dosages of Fish Oil on Recovery and Soreness Following Eccentric Exercise. *Nutrients*. 2020 Jul 27;12(8):2246. doi: 10.3390/nu12082246. PMID: 32727162; PMCID: PMC7468920. / Kyriakidou, Y., Wood, C., Ferrier, C. et al. The effect of Omega-3 polyunsaturated fatty acid supplementation on exercise-induced muscle damage. *J Int Soc Sports Nutr* 18, 9 (2021). <https://doi.org/10.1186/s12970-020-00405-1>
*6 - Deinema, L.A. et al.(2017). A Randomized, Double-Masked, Placebo-Controlled Clinical Trial of Two Forms of Omega-3 Supplements for Treating Dry Eye Disease. *Ophthalmology*, 124, 43-52.
*7 - Wu, J. et al.(2017). Dietary Intakes of Eicosapentaenoic Acid and Docosahexaenoic Acid and Risk of Age-Related Macular Degeneration. *Ophthalmology*, 124, 634-643.
*8 - Chew, E.Y.(2017). Dietary Intake of Omega-3 Fatty Acids From Fish and Risk of Diabetic Retinopathy. *JAMA*, 317, 2226-2227.

CERTIFICATE OF ANALYSIS



ROMEGA® 30 PREMIUM

Product name:	Romega®30 Premium
Product number:	PL1301
Specification number:	SPEC1301CE-1 Version 1.0
Lot:	U187/002/A23
Date of manufacture:	July 6, 2023
Retest date:	July 2, 2026
Material:	Marine Omega-3 Phospholipids derived from herring caviar. Fish oil triglyceride level adjusted to optimize product viscosity.
Additives:	Approx. 1750 ppm of a non-GMO and IP certified, food grade antioxidant (mixed natural tocopherols) is added.

Test	Unit	Acceptance criterion			Result	Method
Appearance		Amber viscous oil			compliant	AM2020
Solubility		Oil soluble and water dispersible			compliant	AM2021
		Minimum	Maximum	Typical		
EPA (C20:5 n-3)	Area %	11			13	AM1001
DHA (C22:6 n-3)	Area %	40			44	AM1001
Total omega-3 ¹⁾	Area %	60			67	AM1001
EPA (C20:5 n-3)	mg/g	90			106	AM1001
DHA (C22:6 n-3)	mg/g	310			360	AM1001
Total omega-3 ¹⁾	mg/g	450			554	AM1001
Total phospholipids, of which	mg/g	300			332	AM1002
Phosphatidylcholine (PC) ²⁾	mg/g	255			283	AM1002
Phosphatidylinositol (PI) ²⁾	mg/g			9	10	AM1002
Phosphatidylethanolamine (PE) ²⁾	mg/g			26	28	AM1002
Sphingomyelin (SPH)	mg/g			8	8	AM1002
Total neutral lipids	mg/g		700		compliant	AM1003
Total choline ³⁾	mg/g			40	compliant	AM1050
Sum of 14-HDHA, 17-HDHA, 18-HEPE	µg/g	150		225	220	AM1062
Specialized Pro-Resolving Mediators (SPMs):						
Maresins (MaR1, MaR2)	µg/g	Report value			0.8	AM1062
D-series Resolvin RvD5	µg/g	Report value			0.2	AM1062
E-series Resolvin RvE2	µg/g	Report value			0.6	AM1062
Protectin DX (NPDx)	µg/g	Report value			0.8	AM1062
Water content by Karl Fisher	%		3.0		0.5	AM1004
Peroxide value	meq/kg		3.0		1.3	AM1005
Dioxins and furans (PCDDs and PCDFs) ³⁾	pg WHO-TEQ/g		1.75		compliant	AM1014
Dioxin like PCBs ³⁾	pg WHO-TEQ/g		3.0		compliant	AM1014
Dioxins + furans + dioxin like PCBs ³⁾	pg WHO-TEQ/g		3.0		compliant	AM1014
Benzo(a)pyren ³⁾	ng/g		2.0		compliant	AM1019
Sum of benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene ³⁾	ng/g		10.0		compliant	AM1019
PCB 209 congeners ³⁾	mg/kg		0.09		compliant	AM1014
Lead (Pb) ³⁾	mg/kg		0.05		compliant	AM1017
Mercury (Hg) ³⁾	mg/kg		0.01		compliant	AM1015
In-organic Arsenic (As) ³⁾	mg/kg		0.1		compliant	AM1018
Cadmium (Cd) ³⁾	mg/kg		0.1		compliant	AM1016

1) Total n-3: EPA, DHA, 18:3, 18:4, 20:4, 21:5, 22:5 2) Including lyso forms 3) Frequency analysis



CERTIFICATE OF ANALYSIS

ROMEGA® 30 PREMIUM



Lot U187/002/A23 is released according to current product specification.

august 10, 2023

DocuSigned by:

Marte Frida Grønnevet

CB679E4676A1457...

Date

Marte Frida Grønnevet,
Pharma Administrator

august 10, 2023

DocuSigned by:

Sigrun Lindholm Knardal

32BBAC45DFFF4CE

Date

Sigrun L. Knardal,
QA Manager