

Omega-3 fatty acids

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covering years 2009-2011. All featured articles freely accessible from Dec 19, 2011 until Feb 29, 2012.



The health benefits of the omega-3 polyunsaturated acids are now widely recognized and there is a growing interest in dietary supplements and functional foods enriched with PUFA. This virtual issue highlights articles dealing with the biological activity and bioavailability, sources, manufacturing, analysis and formulations of ω -3 PUFA, especially EPA and DHA.



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HIGHLIGHTS

Omega-3 and insulin resistance

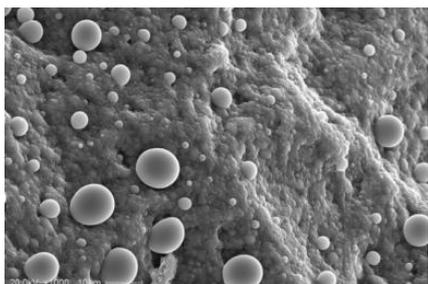
It is shown for the first time that ω -3 PUFA improve the insulin resistance parameters in a postprandial situation after an oral fat load in humans.

[DOI: 10.1002/ejlt.201000504](https://doi.org/10.1002/ejlt.201000504)

Chewable omega-3 capsules

A new vehicle for oral delivery of PUFA is described: soft chewable capsules with emulsified oil trapped in a gelatin matrix (image ↓). The bioavailability of PUFA in this form is greater than from conventional gel capsules.

[DOI: 10.1002/ejlt.201000450](https://doi.org/10.1002/ejlt.201000450)



The Omega-3 index (FEATURES)

The Omega-3 Index, defined as the percentage of EPA+DHA in red blood cells, has been recently proposed as a new biomarker of cardiovascular risk.

[DOI: 10.1002/lite.201000034](https://doi.org/10.1002/lite.201000034)

[DOI: 10.1002/lite.200900003](https://doi.org/10.1002/lite.200900003)

Fish oil (REVIEW)

Fish oil – from the bad and the ugly to the precious and good. EuroFedLipid Highlight article.

[DOI: 10.1002/ejlt.201000046](https://doi.org/10.1002/ejlt.201000046)

Water-soluble ω -3 powder

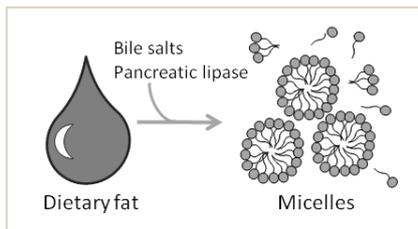
A procedure for preparing a water soluble, pollutant-free PUFA powder from cod liver oil is described.

[DOI: 10.1002/ejlt.201000502](https://doi.org/10.1002/ejlt.201000502)

Bioavailability of free and bound ω -3 fatty acids

Here the bioavailability of ω -3 PUFA from fish oils, TAG concentrate and ethyl ester concentrate was probed in an in vitro system mimicking the conditions in the intestine (image ↓).

[DOI: 10.1002/ejlt.201000329](https://doi.org/10.1002/ejlt.201000329)



PUFA and polyisoprenylation

It is shown that owing to the structural similarity of PUFA and polyisoprenyl groups, PUFA interfere with polyisoprenylation, important for the function of many proteins implicated in cancer.

[DOI: 10.1002/ejlt.201100030](https://doi.org/10.1002/ejlt.201100030)

Plant sources of ω -3 & ω -6

Seeds from 30 plant species were analyzed in order to identify potential new sources of α -linolenic, stearidonic, and γ -linolenic acids.

[DOI: 10.1002/ejlt.201100008](https://doi.org/10.1002/ejlt.201100008)

Omega-3: Supplies, applications, and stability (FEATURE)

Considerable efforts focus on increasing ω -3 levels in plants. Other challenges include increasing the oxidative stability in food products and product labeling.

[DOI: 10.1002/lite.201100091](https://doi.org/10.1002/lite.201100091)

Enzymatic enrichment of ω -3

Two articles address lipase-catalyzed regioselective enrichment of DHA and EPA from fish and fish oil.

[DOI: 10.1002/ejlt.201000009](https://doi.org/10.1002/ejlt.201000009)

[DOI: 10.1002/ejlt.201000560](https://doi.org/10.1002/ejlt.201000560)

Rapid analysis of fish oil

A rapid procedure based on FT-NIR models was developed for analysis of fish oils and their EE derivatives to replace time-consuming GC.

[DOI: 10.1002/ejlt.200900186](https://doi.org/10.1002/ejlt.200900186)



European perch, (C) Dpomeray

DHA producing desaturase

Long chain PUFA-producing Δ 4-desaturase which can be useful for the production of DHA in transgenic plants and algae was identified in the microalga *Ostreococcus lucimarinus*.

[DOI: 10.1002/ejlt.201100069](https://doi.org/10.1002/ejlt.201100069)

Oil from microalgae (REVIEW)

Algal oils contain high levels of ω -3 PUFA. An overview of recent advances in technologies for extracting and purifying microalgae oil is presented.

[DOI: 10.1002/ejlt.201000455](https://doi.org/10.1002/ejlt.201000455)

Oxygenated metabolites of PUFA

The biosynthesis of oxygenated products of PUFA and their functions in the vascular system is reviewed.

[DOI: 10.1002/ejlt.201000045](https://doi.org/10.1002/ejlt.201000045)

Omega-3 PUFA in aging (FEATURE)

During aging, the metabolism of ω -3 PUFA changes, contributing to altered physiological functions in elderly.

[DOI: 10.1002/lite.201100089](https://doi.org/10.1002/lite.201100089)

DHA lysophospholipids (FEATURE)

Here the production of lysophospholipids rich in DHA is described.

[DOI: 10.1002/lite.201100154](https://doi.org/10.1002/lite.201100154)