

## NEW STUDY

# The first vegetarian EPA/DHA alternative to fish oil

## Introduction

There is a huge body of evidence to demonstrate the positive health benefits that can be gained from a diet rich in omega-3s.<sup>1</sup> With more than 25,000 published papers to date, there is continued investment to support research into health benefits, as well as work to investigate new forms and applications.

Discussions are ongoing as to the relative benefits offered by alternatives to traditional fish oil sources, yet there remains a more basic requirement to make consumers aware of the need to increase DHA and EPA omega-3 consumption. It is important that the industry works collectively – and alongside academic experts – to:

- reinforce the wealth of existing science supporting the safety of these fatty acids
- educate the general population on the importance of sufficient DHA and EPA intake
- ensure that DHA and EPA are accessible to the broadest possible consumer base.

Put simply, DHA and EPA help to keep some of the body's most important organs functioning and healthy at every life stage. Much work has already been carried out to understand the role that essential fatty acids can play in brain, eye and maternal health. However, with cardiovascular disease identified by the World Health Organization as the number one cause of mortality globally, it is the heart healthy benefits of DHA and EPA that perhaps offer the most potential to functional food, beverage and dietary supplement manufacturers.



## Did you know?

- The two most common omega-3 fatty acids are: DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid).
- The most beneficial omega-3s are DHA and EPA, which are principally found in oily fish such as salmon and tuna. However, most populations are not eating enough oily fish. In the US, for example, DHA and EPA intake is only approximately 60 and 30 mg/d, respectively, on average.<sup>2</sup>
- Fortifying and supplementing the diet is an excellent way to increase DHA and EPA intake. Fish oils, algal oils and krill oils can be used to enrich the omega-3 content of foods, or produce high quality supplements.
- Some companies and individuals have claimed that DHA and EPA in krill oil offers greater bioavailability and can be more efficiently absorbed than DHA/EPA in fish oils. The study design limitations demonstrate there is a clear need for more in-depth research, including human clinical trials.

## About DSM's *life'sOMEGA™* 60

Derived from a sustainable algal source, *life'sOMEGA™* 60 is a vegetarian source of the most important omega-3 fatty acids, DHA and EPA. *life'sOMEGA™* 60 is the first vegetarian DHA/EPA product available and is being marketed as a highly sustainable alternative to other sources, which goes straight to the algal source.

*life'sOMEGA™* 60 is the latest addition to DSM's comprehensive portfolio of omega 3s, which also includes *life'sDHA™*, a vegetarian form of DHA derived purely from algae, and MEG-3® omega 3 EPA/DHA from fish oil.

## A healthy heart

DHA and EPA have long been the focus of scientific research in the cardiovascular health arena. In June 2013, EU approval was given to the following claims under article 13 of the nutrition and health claims regulation (NHCR)<sup>3</sup>:

***“DHA contributes to the maintenance of normal blood triglyceride levels.”***

***“DHA and EPA contribute to the maintenance of normal blood triglyceride concentrations.”***

***“DHA and EPA contribute to the maintenance of normal blood pressure.”***

High levels of triglycerides can lead to a thickening of the arterial wall, which in turn increases the risk of heart disease. DHA and EPA have been proven to decrease the blood levels of triglycerides, thus minimizing the risk of heart disease.

## The need for an alternative to fish oil

Fish oil offers a number of proven benefits to heart health, but there is a need for alternatives that can cater to the needs of the vegetarian market. With the world's fish population being managed for long term sustainability, there is also rising demand for innovative and sustainable sources of DHA and EPA omega-3 fatty acids.

In fact, fish obtain DHA and EPA from consuming microalgae, so by going straight to the source, consumers can get these healthy fatty acids from the same natural route that fish do. Micro-algal oil has now emerged as an efficient and environmentally-friendly source of DHA and EPA and is generally recognized as safe (GRAS) at doses up to 2 g/day as a dietary supplement.

Micro-algal oil contains a larger proportion of DHA than EPA and DSM's *life'sOMEGA™ 60* is the first high potency, vegetarian and non-GMO omega-3 fatty acid product on the market. It contains 60 per cent total omega-3, with a minimum content of 300 mg/g DHA and 150 mg/g EPA in a natural triglyceride form.

For more information, visit [www.dsm.com/nutritional-lipids](http://www.dsm.com/nutritional-lipids)

With thanks to Kevin C. Maki, Karin Yurko-Mauro, Mary R. Dicklin, Arianne L. Schild, Jeffrey G. Geohas.<sup>5</sup>

### References:

- <http://www.efsa.europa.eu/en/efsajournal/pub/2078.htm>
- Salem N., Kuratko C., 'A reexamination of krill oil bioavailability studies', *Lipids in Health and Disease* 2014, 13:137
- <http://www.efsa.europa.eu/en/efsajournal/pub/2078.htm>
- K. C. Maki, et al., 'A new, microalgal DHA- and EPA-containing oil lowers triacylglycerols in adults with mild-to-moderate hypertriglyceridemia', *Prostaglandins Leukotrienes Essent. Fatty Acids* (2014), <http://dx.doi.org/10.1016/j.plefa.2014.07.012>

5 *ibid*

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## LATEST RESEARCH

DSM's *life'sOMEGA™ 60* was used as the test substance in a new trial, of which the results have recently been published in *Prostaglandins, Leukotrienes and Essential Fatty Acids*.<sup>4</sup>

### A new, microalgal DHA- and EPA-containing oil lowers triacylglycerols in adults with mild-to-moderate hypertriglyceridemia

#### Background

DHA and EPA have been shown to be effective in lowering triacylglycerol levels in people with hypertriglyceridemia but, despite being a good source of omega-3 fatty acids, a normal dietary intake of oily fish is unlikely to achieve the reduction required. This means that omega-3 supplementation is often recommended to individuals with mild to moderately elevated triacylglycerol levels (i.e. 150 ≥ but <500mg/dL).

#### Method

93 healthy adults with mild-to-moderate hypertriglyceridemia took part in this double-blind, placebo-controlled, parallel trial. The participants were generally active and healthy men and non-pregnant, non-lactating women aged 18-79 years, who were not receiving lipid-altering drug therapy (with the exception of stable statin therapy). The treatment groups showed no significant differences in terms of demographic breakdown.

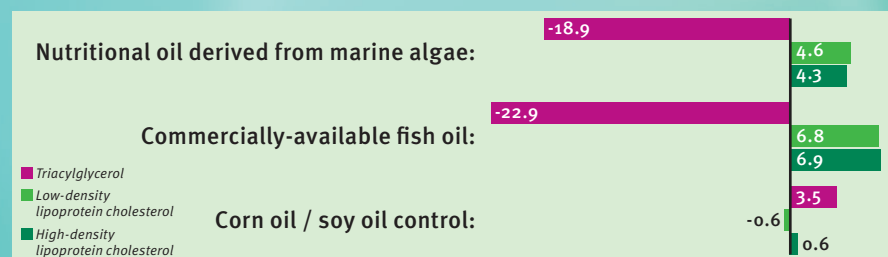
The subjects were randomized to receive either a nutritional oil derived from marine algae, fish oil or a corn oil/soy oil control as 4x 1g soft gel capsules/day with meals for 14 weeks, and were instructed to maintain their habitual diet, sleep and exercise patterns.

Figure 1: DHA/EPA content of test substances:

Nutritional oil derived from marine algae: 2.4g / day	RATIO: DHA 2.7 : 1 EPA
Commercially-available fish oil: 2.0g / day	RATIO: DHA 0.7 : 1 EPA
Corn oil / soy oil control: N/A	N/A

#### Results

Figure 2: Percentage change in triacylglycerol, low-density lipoprotein cholesterol and high-density lipoprotein cholesterol from baseline:



#### Conclusions

This study demonstrated that ingestion of microalgal oil providing 2.4 g/day DHA + EPA lowered triacylglycerol levels to a degree that was not different from that of a standard fish oil product, and that was significantly more than for a corn oil/soy oil control.