

# Clinical Update

## **Omega-3 structure may affect bioavailability: Study**

The type of omega-3 we take may have a distinct affect on how much is actually absorbed, according to new research.

*(European Journal of Lipid Science and Technology, 2010)*

The study, published in the European Journal of Lipid Science and Technology, suggests that omega-3 concentrates – such as triacylglycerides – have much better bioavailability than purified fish oil.

The team of Spanish researchers said that the study contributes to knowledge on the intestinal lipolysis of omega-3 sources, which can be found in many commercial forms, from purified fish oil to concentrates of free fatty acids and ethyl esters.

They said that despite differences regarding their intestinal metabolism, there is lack of information about the specific composition of the absorbable fraction from omega-3-TAG or omega-3-EE concentrates.

*“This comparative study showed that the in vitro bioaccessibility of omega-3-polyunsaturated fatty acid (PUFA) seems to be better as omega-3-TAG concentrates than purified fish oils,”* said the researchers, led by Dr. Diana Martin from the Universidad Autónoma de Madrid, Spain.

### **Fish oil**

Consumption of fatty acids from the omega-3 family – particularly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) – have been advised due to their beneficial role as anti-thrombotic, anti-inflammatory, and hypolipidemic fatty acids.

The authors noted, however, that in many populations consumption of fish is quite low and does not achieve levels adequate for reaching the minimal intake level of EPA and DHA. They added that because of this, an easy way of increasing omega-3-polyunsaturated fatty acids (PUFA) intake is by fish oil supplements.

They said that recent studies have produced contradictory evidence for the in vitro metabolism of fish oils and omega-3-concentrates.

The new study compared the *in vitro* bioaccessibility of omega-3-oils from different sources. The researchers tested salmon oil, tuna oil, enriched-omega-3 oil as triacylglycerols (omega-3-TAG), and enriched-omega-3 oil as ethyl ester (omega-3-EE).

### **Study details**

Dr Martin and colleagues reported the rate of hydrolysis of omega-3-TAG concentrates was continuous throughout the time of reaction, whereas the digestion of salmon oil and tuna oil was initially faster but stopped after 10min. They added that poor hydrolysis took place for the enriched-omega-3 oil as omega-3-EE.

The breakdown of omega-3-TAG oil, salmon oil, and tuna oil mainly consisted of free fatty acids (FFAs) and monoacylglycerides, whereas the breakdown from digested omega-3-EE oil consisted of free fatty acids and undigested ethyl esters.

*“This comparative study showed that the in vitro intestinal digestion of omega-3 (EPA and DHA) sources as fish oil, triacylglycerides, or ethyl ester concentrates was different,”* said Martin and colleagues. *The highest degree of hydrolysis and inclusion of lipid products ... was found for the omega-3-TAG oil, but compared to fish oils long times of digestion were required,”* they added.

(Source: [www.nutraingredients.com](http://www.nutraingredients.com))