



Natural Breakthrough for Fish Oils

by L. Stephen Coles, M.D., Ph.D.

Vectomega® just might well be the best fish oil today. I say this as a physician who has examined many brands of fish oils. Both in terms of scientific and medical documentation and green or environmental concerns, Vectomega stands out as perhaps the most natural fish oil tablet and the only whole food fish oil that attempts to provide users with the full spectrum of fatty acids and phospholipids found naturally in fish.

Actually, Vectomega is more than a fish oil. I would describe Vectomega as the first whole food

omega-3 DHA/EPA complex with natural marine phospholipids and hydrolyzed peptides. And what this means for patients is a very potent (as close to a salmon filet as possible) natural complex reported to be up to 50 times more effective than ordinary fish oils.

In 2001, the French government, in conjunction with the National Interprofessional Office for Sea Products and Aquaculture, asked researchers throughout France to investigate potential uses of marine byproducts and accessory catches. This

governmental research project gave rise to the manufacturing process involved with the patented Vectomega fish oil tablets, one which extracts marine phospholipids (*phospholipid-protein compounds*) complexed with eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from salmon heads, a byproduct of the fishing industry, located in Norway and Scotland.

Omega-3 fatty acids, found in fish oil as EPA and DHA, have become increasingly popular in response to a growing body of science on their health benefits.

Research has demonstrated that omega-3 fatty acids are essential for normal growth and neurological development of fetuses and children. Omega-3 fatty acids play an important role in the prevention of numerous diseases such as cardiovascular disease, dementia, depression, joint inflammation, lupus, multiple sclerosis, and other autoimmune conditions. The American Heart Association officially recommends fish oil capsules to supplement your diet if you do not consume adequate servings of fatty, omega-3-rich fish (such as salmon and herring).

Studies demonstrate that EuroPharma's Vectomega is the first nutritional supplement that carries the long-chain polyunsaturated fatty acids, EPA and DHA, directly to tissues (such as the brain) with high metabolic requirements. The EPA and DHA are vectorized with naturally occurring marine phospholipids. These phospholipids aid in transporting the EPA and DHA through cellular membranes directly to specific cellular targets, such as cardiac and neural cells.

IS THIS REALLY NATURAL?

Typically, lesser brands of poor quality fish oils currently on the market undergo rigorous processing and refining before they are encapsulated, yet are positioned as "all natural." Fish oils are generally extracted from small, cold-water, deep-sea fish, such as the sardine, anchovy, capelin, herring and menhaden, containing high proportions of EPA and DHA. The fish then undergo "cooking and pressing" steps, using a thermal treatment of the raw material at temperatures close to boiling and causing coagulation of the proteins. The raw material is then introduced into presses to separate the proteinaceous aqueous phase containing the oil from the solid matter. Lipid fractions are separated by cryoconcentration or "winterization," according to

their fusion point and can be concentrated by repeated processes.

The fish oil may then be concentrated for increased amounts of DHA or EPA using a urea complex. This concentration process requires large quantities of solvents and chemical products (soda, hexane and methanol) and generates a huge amount of toxic waste that needs to be reprocessed.

VECTOMEGA: A PATENTED PROCESS OF ALL-NATURAL OMEGA-3 EXTRACTION

In contrast, Vectomega uses a patented biological innovation that extracts naturally occurring marine phospholipids with the omega-3 fatty acids, EPA and DHA. Very high yields of marine oil extraction are obtained from a proprietary enzymatic process of proteinaceous tissues found in the salmon heads. This enzymatic reaction is carried out in less than an hour in an inert atmosphere at a temperature lower than 60°C. The full amount of oil can be extracted using this patented process while keeping the marine oil's natural proportions and composition. This patented innovation, called vectorization, uses a gentle, cold water and enzyme process, avoiding heat, solvents, and chemical modifications that are utilized to process other fish oils. This is a very advanced and "green" technology that delivers a great natural representation.

CARBON POSITIONING FOR ENHANCED BIOABSORPTION AND STABILITY

Natural oils found in fresh salmon have a very specific carbon distribution of omega-3 fatty acids on the triglyceride form of the molecule. The EPA and DHA found in fresh salmon oil are predominantly in the sn-2 (mid) position.

However, when fish oil is processed and refined, this results in a random redistribution of fatty acids, generally increasing the amount of unsaturated FAs at the sn-1/sn-3 (terminal) positions of the carbon chain. However, the enzyme vectorization of Vectomega has no effect on the oil's natural sn-2 carbon position. This is significant because when DHA or EPA fatty acids are attached to the glycerol in mid position (sn-2), the molecule is more stable and less prone to oxidation than those attached to the terminal position sn-1 or sn-3.

Omega-3 oil's sn-2 position is also significant in regards to bioabsorption. Clinical studies have



**A Breakthrough in
Natural Fish Oils**
continued

shown that the composition and position of fatty acids affects both bioavailability and digestibility of fats and oils in infants as well as adults. In one study, the original speculation that triglyceride structure might influence lipid metabolism was based on observed differences in fat absorption by infants fed breast milk or formula milk. Although the formula milk contained “natural fats,” they were of different triglyceride orientations. The study concluded that fatty acids from breast milk and formula milk with palmitic fatty acid in the sn2 position was better absorbed than fat with sn1,3 palmitic acid from palm oil.

Vectomega’s phospholipid vectorization has been clinically demonstrated to have superior bioavailability compared to other fish oils. Research has shown that because the marine phospholipids contain DHA and EPA in a specific and optimal location on the carbon chain, Vectomega is up to 50 times more absorbable via cell membranes.

Finally, there is the matter of avoiding the fishy aftertaste of so many fish oil supplements. We know that proteins and peptides take part in transporting polyunsaturates, by associating themselves with phospholipids. For the consumer, the first most obvious effect is the masking of smells after ingestion. There is no reflux. The presence of

peptides gives increased phospholipid peptide complex solubility. We also know from literature on the subject that peptides stemming from fish proteins have serotoninergetic properties, that is, they increase the concentrating of circulating serotonin, a neuropeptide responsible for emotional well-being; however, for the moment no formal proof has been provided.

**VECTOMEGA’S MARINE
PHOSPHOLIPIDS—SUPERIOR
EPA AND DHA CARRIERS**

Vectomega fish oil is comprised of 60 percent naturally occurring phospholipids. These marine phospholipids are amphiphilic, meaning they contain a polar water-soluble group attached to a water-insoluble hydrocarbon chain (EPA or DHA omega-3 fatty acids).

The phospholipid’s amphiphilic properties aid in transporting EPA and DHA across the hydrophilic (water-bearing) cellular membrane barriers for superior bioabsorption compared to so many of the “neutrally charged” (denatured) commercial fish oils on the market today.

There are five types of marine phospholipids in Vectomega that are extracted from the salmon heads: phosphatidylcholine, phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol,

<i>Type of Phospholipid (PL)</i>	<i>Percentage of Vectomega</i>	<i>Action in brief</i>
Phosphatidylcholine (PC) or Marine Lecithin	68%	Assists in the introduction of DHA into the heart muscle. Protects the mitochondria from oxidative damage, decreasing the impact of auditory and visual aging.
Phosphatidylethanolamine (PE)	11%	Combined with PC, helps in the building of the myelin sheath.
Phosphatidylserine (PS)	9%	The most widespread of all membrane PLs, protects from ischemic attacks (stroke) or age-related dementias.
Phosphatidylinositol (PI)	5%	Acts on the regulation of cellular calcium. Has shown its effectiveness on obsessive compulsive disorders, panic attacks, depression, manic depression and Alzheimer’s disease.
Sphingomyelin (Sph)	5%	Its pro-apoptotic activity decreases the risks of coronary heart disease and cancer of the bowel (colon). Decreases parietal cell toxicity of bile salts. Sphingolipids are mostly present in the myelin sheathes.

and sphingomyelin. These marine phospholipids are molecules of specific cellular membrane structures; therefore, they exhibit affinity and are able to transport EPA and DHA to specific cells or tissues.

VECTOMEGA AND ALZHEIMER'S DISEASE

A recent *in vivo* study published in the *Journal of Neurochemistry* demonstrated that docosahexaenoic acid is an essential polyunsaturated fatty acid in the central nervous system and has been shown in several epidemiological and *in vivo* studies to have protective effects against Alzheimer's disease. This study concluded that DHA pre-treatment was observed to significantly increase neuronal survival upon amyloid-beta exposure by preventing cytoskeleton perturbations, caspase activation and apoptosis, as well as by promoting extracellular signal-related kinase (ERK)-related survival pathways. These data suggest that DHA enrichment probably induces changes in neuronal membrane properties with functional outcomes, thereby increasing protection from soluble amyloid-beta oligomers. Such neuroprotective effects could be of major interest in reducing the risk of Alzheimer's and other neurodegenerative diseases.

In a human open clinical trial just concluded in Europe, 40 healthy subjects took two Vectomega tablets per day (providing 32.8 mg DHA and 10.4 mg of EPA per two tablets) without any modifications to diet or exercise habits. After 60 days, the subjects experienced a 16 percent decrease in triglycerides, a 10 percent decrease in total cholesterol, and a 13 percent increase in HDL levels. In comparison, traditional fish oil studies that have obtained similar results to this Vectomega study in triglyceride and cholesterol results if the subjects used a range of 3.6 grams to 4 grams of fish oil per day (equating to approx. 3,400 mg per day of combined DHA and EPA).

THE DOCTOR'S PRESCRIPTION

EuroPharma's Vectomega is an innovation in omega-3 supplementation that provides maximum absorption across cell membranes, reduced dose, and targeted cellular structures.

Vectomega is truly a revolution in omega-3 supplementation. The patented French biotechnical innovations in processing ensure that the omega-3 fatty acids, EPA and DHA, are in a sn-2 position and are vectorized with marine phospho-

lipids, increasing bioavailability.

Two tablets (600 mg) of Vectomega are equal, says the company, to 16 capsules (7,200 mg) of standard fish oil. Research has shown that because the marine phospholipids contain DHA and EPA in a specific location on the carbon chain (sn-2 on the glycerol), Vectomega is up to 50 times more absorbable via cell membranes.

The results from this latest trial support previous findings and prove that Vectomega has optimal bioavailability and works on a cellular level. My decades of experience in the anti-aging field and in critically assessing supplements tells me that Vectomega is destined to hold a prime position in the fight against anti-aging and to support optimal health at all levels. If it's time for you to begin supplementing fish oils, just take two Vectomegas, the all natural healthy prescription. ■



Resources

For more information and to learn where to find Vectomega near you, visit www.EuroPharmaUSA.com.

Two Vectomega tablets are reported to be equivalent to one 5-oz serving of salmon, delivering the full omega-3/phospholipid/peptide complex present naturally.

Stephen Coles, M.D., Ph.D. is a co-founder of the Los Angeles Gerontology Research Group (<http://www.grg.org>) which maintains a current table of the World's Oldest Living Supercentenarians on its website with the help of 40 international experts and consults for the *Guinness Book of World Records* in the category of Longevity. The GRG also sponsors an Internet Discussion Group of 192 worldwide participants on Biogerontology. Dr. Coles is a Co-founder and Director of the 501(c)(3) Non-Profit Supercentenarian Research Foundation (SRF) to study the genetic basis for the longevity of the world's oldest old. He has participated in the autopsies of five California centenarians (of eight such autopsies that were done worldwide) to establish their true causes of death, which is not always the same as what gets written on Death Certificates.