Comparing Vegan Omega 3-6-9 to Neptune Krill Oil supplements.

There has been much marketing "Hype" about the superiority of Krill Oil over traditional fish oil supplements of EPA/DHA.

Most of the "evidence" referred to by Krill Oil marketers claim that the phospholipid form of EPA/DHA in Krill Oil has a higher bio-availability than the triglyceride form as found in fish oil.

However, as the article "Battle of the omega-3 forms: triglycerides, ethyl esters, or phospholipids?" shows: there is no definitive scientific studies on humans that proves that there is a statistically significant difference between the bio-availability of the two and any claim as to the superiority of Krill may be premature.

A study published in (Lipids Health Dis. 2011 ….) demonstrated there was a slightly higher concentration of EPA/DHA and total omega-3 fatty acids into plasma phospholipids after ingestion of Krill Oil compared with total omega-3 fatty acids derived from fish oil, however these differences failed to reach statistical significance.

The advertising of the Krill Oil suppliers is grossly overstated in claiming that Krill is "significantly" better absorbed than fish oil is highly misleading.

When comparing EPA/DHA supplements one must compare the total EPA/DHA between each product. In particular, the amount of DHA is the most critical; as DHA is the active form and EPA must first be converted to DHA before it is biologically active. **Vegan Omega 3-6-9** has 33% more DHA than Krill Oil.

Almost all of the research conducted worldwide over the past 40 years has been on EPA/DHA derived from fish oils. There have been no human clinical studies on Krill Oil in providing benefit for any disease condition. The three human trials to date have only focused on "bio-availability" and not on disease management. The conclusion on "bio-availability" is that there is a slightly higher "bio-availability" of Krill Oil but not of statistical significance; In other words, they are very close to being equal.

Also, Krill Oil is 40% phospholipids and 60% triglycerides so any benefit from the phospholipid form of EPA/DHA is even smaller.

The main points to consider in choosing an Essential Fatty Acid (EFA) supplement are:

1) Does the formula provide both GLA and EPA/DHA?
2) Are the EFA's in the correct ratio to provide the ideal balance of prostaglandins?
3) Does the formula contain vitamin E to ensure stability and bioactivity?
4) Is the formula provided in vegetarian soft capsules?

Nutrient (per 2 capsules)	Vegan Omega 3-6-9	Neptune Krill Oil
Total EPA	0 mg	150 mg
Total DHA	120 mg	90 mg
Total GLA	120 mg	0 mg
Total Omega-9	120 mg	100 mg
Astaxanthin	tr	750 mcg
Vitamin E (d-alpha tocopherol)	50 IU	0 mg
Vegan capsules	yes	no (gelatin)
MSRP Retail price per 60 capsules	$ 32.99	$ 53.00

Notes:

a) Krill oil capsules contain more EPA/DHA than **Vegan Omega 3-6-9** but the more biologically active DHA is 33% higher in **Vegan Omega 3-6-9** than in Krill Oil.

b) **Vegan Omega 3-6-9** contains the ideal ratio of GLA along with DHA to provide the correct cellular balance between series 1 and series 3 prostaglandins, essential for the function of the immune system and other essential hormone functions. GLA is the costliest ingredient in the formula and few companies include it because of price.

c) When choosing an EFA supplement, forget the hype about which is better, krill Oil or fish oil? Humans have consumed fish for millions of years and the human digestive system is fully able to utilize the EFA/DHA contained in fish oils. On the other hand, krill has never been part of the human diet and only recently has Krill oil been introduced to the human diet as capsules of Krill oil.

d) Much of the "science" about the benefit of Krill oil over fish oil is not substantiated in human clinical trials to manage conditions such as heart disease.

e) There is mounting evidence that high dosages of EPA/DHA may contribute to cancer and other diseases. Both Krill oil and **Vegan Omega 3-6-9** provide a reasonable daily amount of EPA/DHA to limit the health concerns of over supplementation.

f) **Astaxanthin** is found in found in microalgae, yeast, salmon, trout, krill, crayfish, crustaceans, and the feathers of some birds. It provides the red color of salmon meat and the red color of cooked shellfish. Shrimp contains 100 times more astaxanthin than krill.

g) The primary use for humans is as a dietary supplement. Research suggests that, due to astaxanthin's antioxidant activity, it may be beneficial in vision and skin health, and in cardiovascular, immune, inflammatory, and neurodegenerative diseases. Some research supports the assumption that it may protect body tissues from oxidative and ultraviolet damage through its suppression of NF-κB activation.

A 2015 meta-analysis of data from ten randomized, controlled trial groups in seven published clinical trials, doses ranging 4 to 20 mg/day, did not indicate a significant effect of supplementation with astaxanthin on plasma lipids profile or fasting glucose.

Neptune krill oil capsules claim 375 mcg of Astaxanthin per 500 mg capsule or 750 mcg per daily dose of two capsules. This amount is far below the amount required to produce therapeutic benefit and it is misleading to suggest that the astaxanthin in krill oil capsules will provide therapeutic benefit. Even doses of 20 mg per day (equivalent to 53 krill oil capsules) will not provide statically significant benefit.

h) New research further supports the evidence that a mixture of GLA and EPA/DHA may be preferred over EPA/DHA on its own. A study from the Department of Human Biology and Nutritional Sciences, University of Guelph, Canada (1) shows that healthy women receiving a mixture of EPA/DHA (fish oil capsules) plus GLA (borage oil capsules) had significant reduction of LDL cholesterol and dihomo gamma linolenic acid (DGLA) increased significantly in serum phospholipids. On the basis of calculated PROCAM values, **the women receiving both GLA and EPA/DHA were estimated to have a 43% reduction in the 10-year risk of myocardial infarction compared to women only receiving EPA/DHA.**

(1). Maggie Laidlaw and Bruce J Holub, Effects of supplementation with fish oil derived n-3 fatty acids and gamma linolenic acid on circulating plasma lipids and fatty acid profiles in women. The American Journal of Clinical Nutrition, Vol. 77, No. 1, January 2003