Fish Oil Supplements Don't Raise Bad Cholesterol Levels

December 16, 2020, Sioux Falls, SD: The Fatty Acid Research Institute (FARI) has published a new research paper in conjunction with The Cooper Institute on omega-3s and low density lipoprotein cholesterol (LDL-C).

Omega-3 fatty acids have a long history of being "heart healthy," and are well-known for lowering blood levels of triglycerides (but typically not cholesterol). Recent questions have been raised, however, about one of the two "fish oil" omega-3 fatty acids, DHA (docosahexaenoic acid) and the possibility that it might actually raise levels of LDL-C, the "bad" cholesterol.

There is good evidence that people with very high serum triglyceride levels (>500 mg/dL) who are treated with high doses of omega-3, i.e., 4 g/day of EPA (eicosapentaenoic acid) and DHA commonly see a rise in LDL-C, whether this occurs in the "real world" with generally healthy people taking fish oil supplements for cardioprotection is not clear.

A recent study from the Cooper Center Longitudinal Study (CCLS) and FARI sheds new light on this question.

The investigators utilized data from 9253 healthy men and women who had at least two preventive medical examinations at Cooper Clinic in Dallas over a 10-year period. These examinations routinely included both blood cholesterol testing and measurement of the Omega-3 Index (i.e., red blood cell (RBC) EPA+DHA levels from OmegaQuant Analytics). Questions about current use of fish oil supplements was also collected.

With this information, the researchers then asked 2 questions: 1) did people who started taking fish oil supplements between visits experience a rise in LDL-C levels, and 2) did LDL-C levels rise in people whose RBC DHA levels increased between visits?

It turns out that the answer to both of these questions was "no." In fact, a 1-unit rise in RBC DHA levels was associated with a small (1-2 mg/dL) but statistically significant *decrease* in LDL-C. And this analysis took into account concurrent changes in background use of cholesterol-lowering drugs like statins. This small decrease in LDL-C is not a clinically-relevant, but this study shows that fish oil supplement use in the general population does not adversely affect LDL-C.

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Dr. William Harris, President of FARI and co-inventor of the Omega-3 Index, was the lead author on this study. In his view, "these new findings from the CCLS clearly show that people who take fish oil supplements need not worry about adversely affecting their cholesterol levels as some have proposed." He also noted that these results also harmonize well with the conclusions of a recent American Heart Association Advisory on the use of omega-3 fatty acids in the treatment of high triglyceride levels. This major review found there is "no strong evidence that DHA-containing prescription omega-3 fatty acid agents used alone or in combination with statins raise LDL-C in patients with high triglyceride levels.[1]"

Commenting on this paper, Dr. Carl Lavie, a cardiologist and Medical Director Cardiac Rehabilitation and Prevention Program at the John Ochsner Heart and Vascular Institute in New Orleans, LA, said, "This large study from the Cooper Clinic indicates that RBC DHA levels are not associated with higher LDL-cholesterol levels (actually with lower), and adding omega-3 supplements was also not associated with increases in LDL-C." Dr. Lavie and colleagues recently published data from 40 studies in over 135,000 participants in the *Mayo Clinic Proceedings* indicating that the combined EPA and DHA dose predicted reductions in major cardiovascular outcomes[2]. "These new data from the Cooper Institute add to the cumulative evidence of the safety and efficacy of omega-3 from dietary sources and supplements, including the combination of EPA and DHA."

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References:

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2. Bernasconi, A.A., Wiest, M.M., Lavie, C.J., Milani, R.V. & Laukkanen, J.A. Effect of Omega-3 Dosage on Cardiovascular Outcomes: An Updated Meta-Analysis and Meta-Regression of Interventional Trials. *Mayo Clinic proceedings* (2020).

About the Fatty Acid Research Institute (FARI)
The Fatty Acid Research Institute (FARI) is a non-profit research and education foundation. FARI was founded in order to accelerate discovery of the health effects of fatty acids, most notably, the long chain omega-3 fatty acids EPA and DHA. FARI researchers and scientists will focus single-mindedly on publishing high-quality research studies on the multiple relationships between fatty acid levels and human (and animal) health outcomes. These studies will improve the ability to predict risk for disease, and more importantly, suggest ways to reduce risk by changing our diets and/or supplementation regimens. www.fareinst.com

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