Some omega-3 oils better than others for protection against liver disease

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(Medical Xpress)—Research at Oregon State University has found that one particular omega-3 fatty acid has a powerful effect in preventing liver inflammation and fibrosis – common problems that are steadily rising along with the number of Americans who are overweight.

The American Liver Foundation has estimated that about 25 percent of the nation's population, and 75 percent of those who are obese, have nonalcoholic fatty liver disease. This early-stage health condition can sometimes progress to more serious, even fatal diseases, including nonalcoholic steatohepatitis, or NASH, as well as cirrhosis and liver cancer.

The study, published online in the Journal of Nutrition, was one of the first to directly compare the effects of two of the omega-3 fatty acids often cited for their nutritional value, DHA and EPA.

In research with laboratory animals, it found that EPA had comparatively little effect on preventing the fibrosis, or scarring, that's associated with NASH. However, DHA supplementation reduced the proteins involved in liver fibrosis by more than 65 percent.

"A reduction of that magnitude in the actual scarring and damage to the liver is very important," said Donald Jump, a principal investigator with the Linus Pauling Institute at OSU and a professor in the College of Public Health and Human Sciences.

"Many clinical trials are being done with omega-3 fatty acids related to liver disease," Jump said. "Our studies may represent the first to specifically compare the capacity of EPA versus DHA to prevent NASH. It appears that DHA, which can also be converted to EPA in the human body, is one of the most valuable for this purpose."

The issues have taken center stage as the weight of Americans continues to rise, with a related increase in the incidence of fatty liver disease and liver damage.

NASH is a progressive form of liver disease that is associated with chronic inflammation and oxidative stress, resulting from excess fat storage in the liver. Chronic inflammation can eventually lead to fibrosis, cirrhosis, or even liver cancer. While management of lifestyle, including weight loss and exercise, is one approach to control the onset and progression of fatty liver disease, other approaches are needed to prevent and treat it.

About 30-40 percent of people with nonalcoholic fatty liver disease progress to NASH, which in turn can result in cirrhosis, a major risk factor for liver cancer. While this research studied the prevention of fatty liver disease, Jump said, ongoing studies are examining the capacity of DHA to be used in NASH therapy.

The levels of omega-3 oils needed vary with the health concern, officials say.

"Omega-3 fatty acids are typically recommended for the prevention of cardiovascular disease," Jump said. "Recommended intake levels of omega-3 fatty acids in humans for disease prevention are around 200-500 milligrams of combined DHA and EPA per day."

Levels used in therapy to lower blood triglycerides, also a risk factor for

cardiovascular disease, are higher, about 2-4 grams of combined EPA and DHA per day. The OSU studies with mice used DHA at levels comparable to the triglyceride therapies.

"DHA was more effective than EPA at attenuating inflammation, oxidative stress, fibrosis and hepatic damage," the researchers wrote in their conclusion. "Based on these results, DHA may be a more attractive dietary supplement than EPA for the prevention and potential treatment of NASH in obese humans."

Provided by Oregon State University