EFFECT OF LOW DOSE OMEGA-3 FATTY ACIDS ON PLASMA FATTY ACIDS AND LIPIDS. GA Spiller, CD Jensen,* J Scala,* Shaklee Research Center, San Francisco, CA.

The effect of omega-3 fatty acid (w3FA) dose on fatty acid composition, and lipoprotein and triglyceride (TG) concentrations of plasma was determined in 18 healthy, normolipidemic adults consuming typical Western diets. Fish intake was restricted and usual diets and body weights were maintained. Doses of w3FAs (1, 3, and 6 g/day) were administered for 1 month/dose in order of increasing dose with a 3 week washout period between doses. Changes in plasma fatty acid percentages, and high density lipoprotein cholesterol (HDL) and TG concentrations from baseline were:

w3FA Dose (g)	EPA (%)	Total w3FA (%)	Total w6FA (%)	TG (mg/dl)	HDL (mg/dl)
1	+0.64^{c}	+1.24^{c}	-0.72^{a}	- 7.28^{a}	+0.06^{b}
3	+2.98^{b}	+4.87^{b}	+1.27^{a}	-11.17^{ab}	+1.86^{b}
6	+4.31^{a}	+6.97^{a}	-6.59^{b}	-16.97^{b}	+7.03^{a}
p<	0.0001	0.0001	0.0001	0.05	0.05

Significant differences denoted by differing superscripts. Plasma linoleic acid, total cholesterol, and low density lipoprotein cholesterol responses to dose did not vary significantly ($p>0.05$). The dose response increase in the percentage of plasma EPA and total w3FA accompanied by a decrease in total w6FA with the 6 g dose, and the significant reduction in plasma TG and elevation of HDL suggest that minor additions of w3FA to the diet can alter plasma fatty acid composition and lipid concentrations.

CETOLEIC ACID IN HUMAN CHYLOMICRONS AFTER HERRING OIL MEAL. DR Gowen,* WE Connor, JD Corliss,* LA Barstad,* Division of Clinical Nutrition, Oregon Health Sciences Univ, Portland, OR

In non-adapted feeding of oils containing 22:1 fatty acid (FA), some species develop transient myocardial lipidosis. Humans who regularly consume marine oils high in 22:1 have very low fasting plasma levels of the major 22:1 isomer, cetoleic (22:1 n-11). Retroconversion of 22:1 has been described in rat small intestine. To see whether appreciable cetoleic could be found in humans beyond absorption and metabolism at the level of the intestinal villus, a fat tolerance test was done to analyze human plasma chylomicrons (CM).

Fasting volunteers (n=6) drank a formula meal which included 50 ml of a herring oil that contained cetoleic at 22.3% of total FA, and 20:5 n-3 (EPA) and 22:6 n-3 (DHA) at 6.9% and 6.6%, respectively. Blood was sampled for CM analysis at baseline and 7 hourly intervals. Another subject was studied at hours 0, 1, 3 and 8, and at hours 12, 16, 20 and 24. Baseline percentages of CM total FA for cetoleic, EPA and DHA were 0.03 ± 0.08 (s.d.), 0.34 ± 0.62 and 0.57 ± 0.70, respectively. At hours 3-6, CM cetoleic was 10.63% ± 4.07, compared with EPA at 2.25% ± 2.40 and DHA at 1.86% ± 1.44. In the subject studied for 24 hours, the mean of the 12-24 hour samples for cetoleic, EPA and DHA were 0.13 ± 0.05, 0.53 ± 0.15 and 0.63 ± 0.26, respectively.

This study is the first to show significant cetoleic incorporation into human CM. At hours of peak CM appearance in venous blood, cetoleic in CM relative to EPA and DHA was roughly proportional to herring oil percentages. Since chronic feeding of marine oils raises fasting EPA and DHA in plasma, but not cetoleic, the data suggest catabolism of cetoleic or conversion into other FA at or beyond the plasma CM level.