

**ABSTRACT (#4801):**

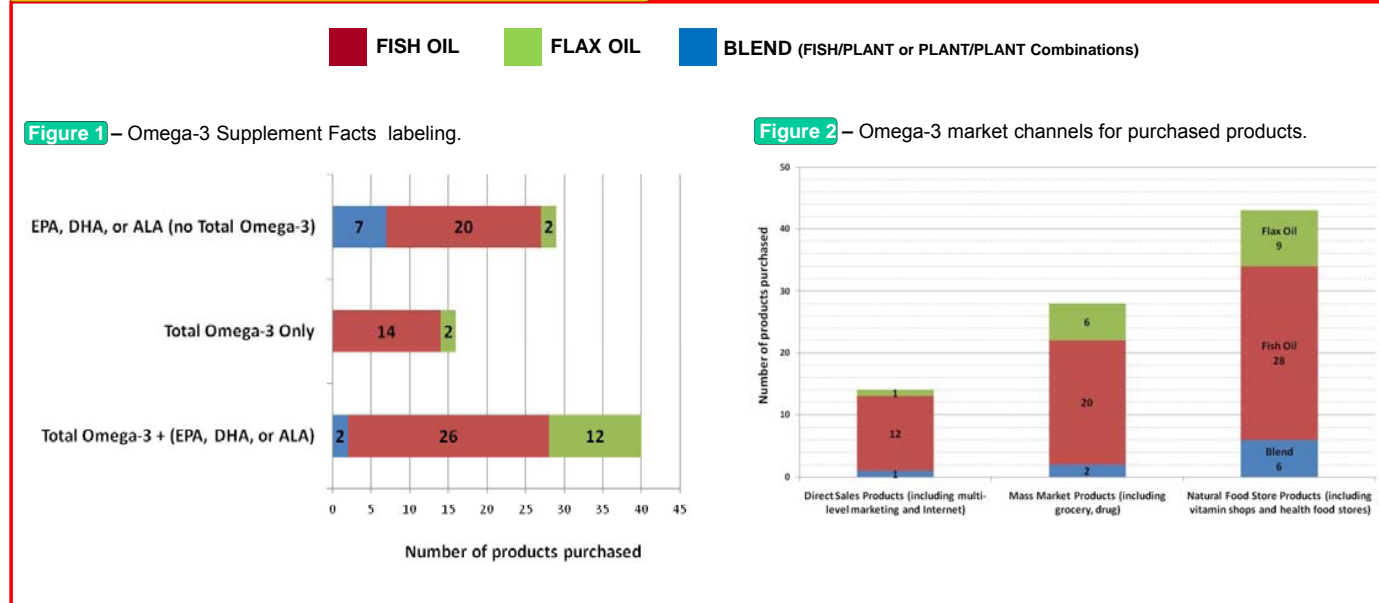
Omega-3 or n-3 polyunsaturated fatty acids (PUFA) include the most widely studied n-3 fatty acids EPA (eicosapentaenoic acid), DHA (docosahexaenoic acid), and ALA (alpha-linolenic acid). In addition to being found naturally occurring in food, n-3 fatty acids are also available in fish- and plant-based dietary supplements. The Nutrient Data Lab (NDL) used product information obtained from various resources including shopping surveys and National Health and Nutrition Examination Survey (NHANES) to develop a sampling plan for the DSID Omega-3 Study. A final list of 85 products was compiled based upon a NDL-developed brand rating system. Supplement Fact information showed n-3 fatty acids listed as total omega-3 (16), individual n-3 fatty acids (29), or both (40). Fish oil softgels (58 products) were the most common product form and matrix, followed by flax oil softgels (12), blend softgel (9), flax oil liquids (4), and fish oil gel packet and gummies (1 each). Label ranges of specific n-3 fatty acids (per serving/day) were 140-2160 for EPA, 90-2025 for DHA, 1300-14000 for ALA, and 400-14000 for total omega-3. Most n-3 products were purchased from natural food stores (43), followed by mass market (28) and direct sales (14). Specific analyzed data and label observations will be employed to determine appropriate methods for reporting analyzed values for omega-3 content of products in the DSID.

**INTRODUCTION AND OBJECTIVE:**

The Nutrient Data Laboratory (NDL), Beltsville Human Nutrition Research Center (BHNRC), Agricultural Research Service (ARS), USDA, the Office of Dietary Supplements (ODS), National Institutes of Health (NIH) and other federal agencies are developing a Dietary Supplement Ingredient Database (DSID) to provide information on analytical content compared to labeled content of dietary supplement products. The DSID is funded, in large part, by the ODS. The first DSID, DSID-1, was released in April 2009 and contained comparison of 18 nutrients found in adult multi-vitamin/mineral products. (<http://dietarysupplementdatabase.usda.nih.gov>)

The objectives of the current DSID omega-3 study are to 1) identify representative products marketed as adult omega-3 (ω-3) dietary supplements, and 2) analyze the ω-3 ingredients present and compare to the amount stated on the label. The U.S. FDA does not require labeling of ω-3 fatty acids in dietary supplements but allows manufacturers to identify levels of individual eicosapentaenoic acid [EPA], docosahexaenoic acid [DHA], or α-linolenic acid [ALA], or total ω-3 fatty acids in the supplement facts panel.

**OMEGA-3 LABEL AND MARKET CHANNEL DISTRIBUTION (n=85):**



**SAMPLING PLAN:**

1. Representative products, brands, forms (sources of ω-3 fatty acids: fish, plant, blend), and market channels for purchase were identified using compiled usage data from NHANES, market research reports, and national shopper surveys.
2. Frequently reported products were purchased. Representative lower market share product brand/source combinations were then selected using a statistically developed algorithm.
3. All products were purchased at stores representing mass market and natural food store distribution channels in each of six locations (AL, NY, CO, CA, MI, MO), from the internet, and other direct sales channel sources. Most ω-3 products were purchased from natural food stores (n=43), followed by mass market stores (n=28), and direct sales (n=14) (Figure 2).

**RESULTS:**

1. A review of Supplement Facts panels for specific ω-3 nutrients showed ranges of 140-2160 mg/day for EPA, 90-2025 mg/day for DHA, 1300-14000 mg/day for ALA, and 400-14000 mg/day for total omega-3 for suggested intakes (Table 1).
2. Nutrients and levels were listed as 'Total omega-3' (n=16), 'Individual n-3 nutrients' (n=29), or both (n=40) (Figure 1). Also observed were the various quantity/serving and servings/day labeling in the supplements facts of omega-3 products (Figure 3).

**NEXT STEPS:**

1. Products and control materials are being analyzed for ω-3 fatty acid content using validated analytical methods.
2. Final laboratory results will be compared to label information about content levels per serving and per day.
3. Label observations and analyzed data will be used to determine the appropriate method for reporting ω-3 values to update the DSID to include information on ω-3 content of dietary supplements.

**REFERENCES:**

1. Institute of Medicine. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. Washington, DC: National Academy Press; 2002/2005.

**OMEGA-3 LABEL NUTRIENT RANGE (n=85):**

**Table 1 – Range of labeled levels (mg/day) by product form (source) and matrix for purchased products.**

	EPA (mg/day)		DHA (mg/day)		ALA (mg/day)		Total Omega-3 (mg/day)	
<b>Fish Oil</b>								
softgel	180-2160	mean=664 median=450 SD=483 n=44	120-2025	mean=464 median=294 SD=383 n=44			400-3825	mean=1207 median=900 SD=733 n=39
gummy			200					
gel packet	350		230				650	
<b>Flax Oil</b>								
softgel					1300-3400	mean=1761 median=1500 SD=709 n=11	1300-4005	mean=1978 median=1500 SD=976 n=11
liquid					4650-14000	mean=10883 median=14000 SD=5398 n=3	12400-14000	mean=13467 median=14000 SD=924 n=3
<b>Blend</b>								
softgel	140-420	mean=292 median=288 SD=86 n=7	90-304	mean=208 median=192 SD=72 n=6	350-848	mean=599 median=574 SD=222 n=6	565-913	mean=739 median=739 SD=246 n=2

An AI (Adequate Intake) of ALA was defined as ~0.6% of energy by the IOM Panel on Macronutrients. This translates into 1.1 g/d for women, and 1.6 g/d for men.<sup>1</sup>

**OMEGA-3 LABEL QUANTITY/SERVING (n=85):**

**Figure 3 – Labeled amounts for quantity per serving and servings per day for purchased products.**

