



**Retina Foundation
of the Southwest**

Leading Research ... Saving Sight

RELATIVE AMOUNTS OF DHA IN FOODS

*ADEQUATE INTAKE for adults has been set to at least 220mg per day

(Internatl Soc for the Study of Fats and Lipids, Am J Coll Nutr 1999 - (<http://www.issfal.org.uk/adequate-intakes.html>))

Current Daily DHA intake for U.S. population is 70mg per day (NHANES III, 1988-1994)

SERVING SIZE EQUALS 3 OUNCES (3 oz is slightly less than 1/2 cup or about the size of a deck of cards)

Fish	mg DHA/serving (highest to lowest)	*Percent of Daily Adequate DHA Intake provided by 3 oz Serving
Mackerel	1600	700%
Tuna	1200	550%
Salmon (wild, Atlantic)	900	400%
Sardines	900	400%
Herring	800	350%
Salmon (farm)	600	300%
Bass, (stripped)	600	300%
Halibut	350	150%
Oysters	200	100%
Crab	200	100%
Perch (ocean)	200	100%
Bass (freshwater)	200	100%
Catfish (farm)	200	100%
Walleyed Pike	200	100%
Cod	150	70%
Lobster	100	50%
Shrimp	100	50%
Flounder	100	50%
Scallops	100	50%
Perch (freshwater)	100	50%
Meats & Eggs		
Egg yolk (2 Good News yolks/3 oz)	130	70%
Egg yolk (2 supermarket yolks/3oz)	40	20%
Chicken (dark)	24	10%
Chicken (white)	14	5%
Beef	2	1%
Examples		
Burger King Fish sandwich	110	50%
Chicken breast sandwich	65	30%
McDonald's Quarter pounder hamburger	11	5%

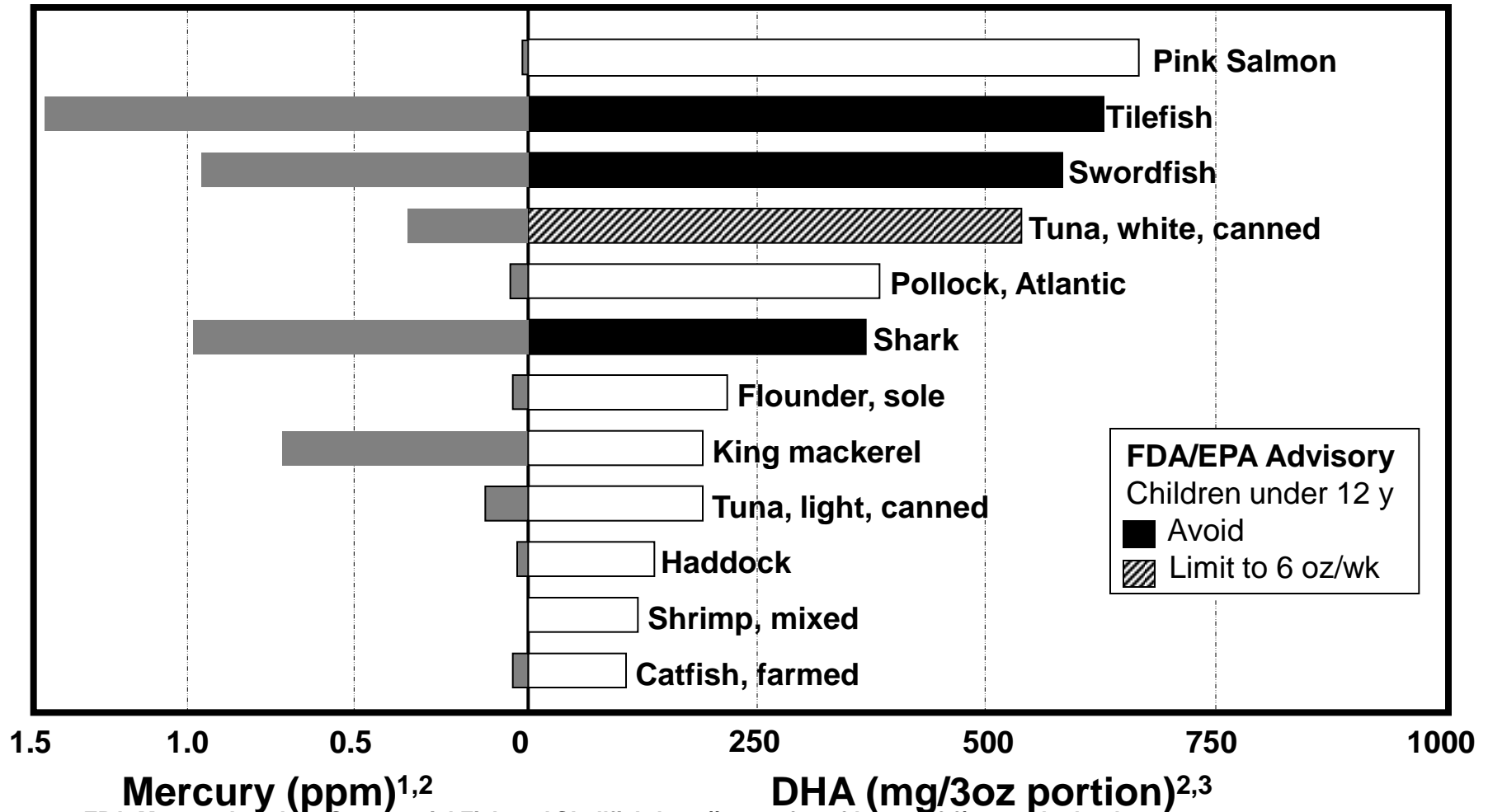
Reference sources: Human Nutrition Services, USDA; World Review of Nutr Dietetics, vol. 83, 1998

Raper et al. J. Am Coll Nutr. 11: p304; 1992

Retina Foundation SW (unpublished data). <http://www.retinafoundation.org/resources-patient.html#Patient11>

DHA and Mercury Levels in Selected Fish and Shellfish

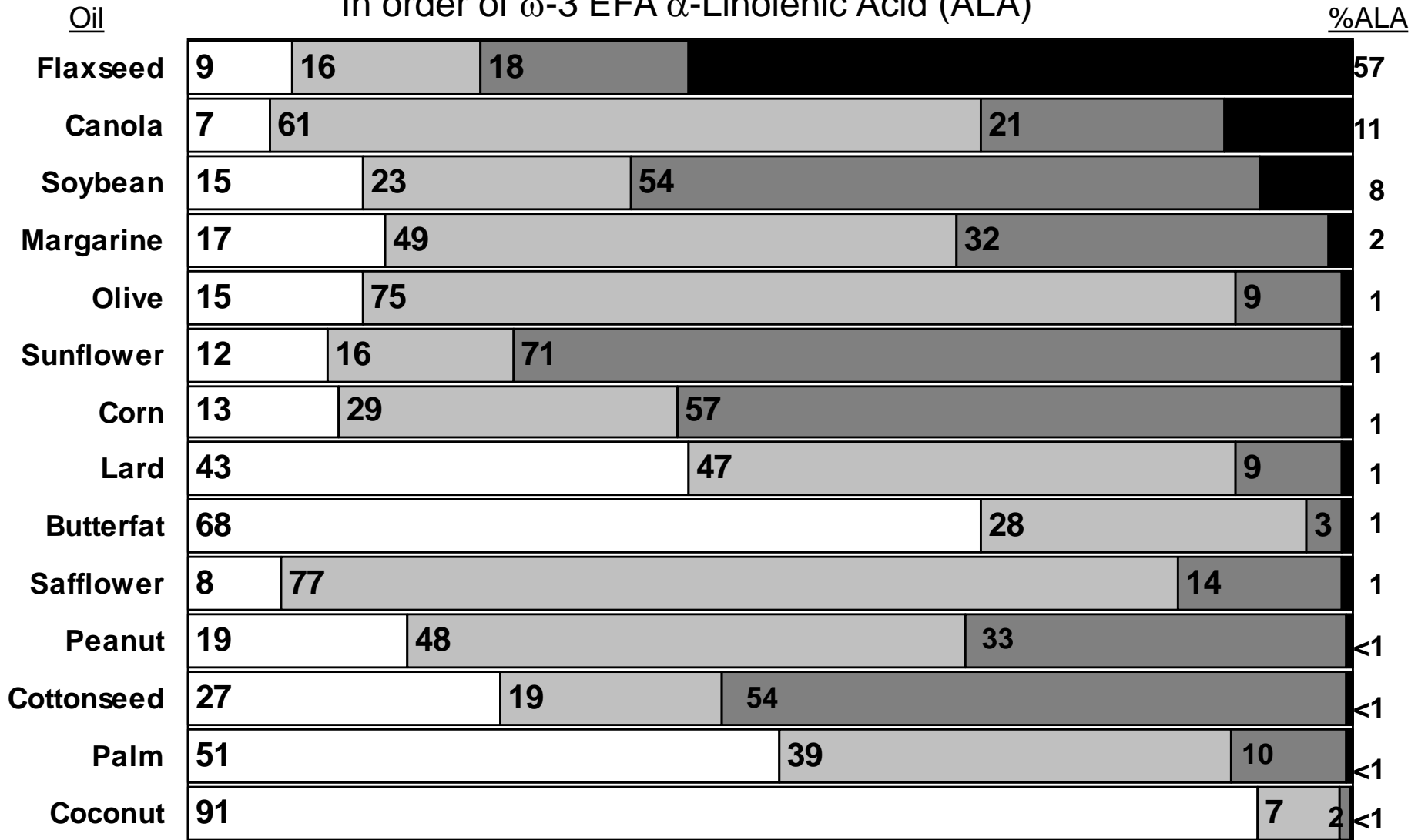
Adults can eat up to 12 oz. total fish per week



1. EPA *Mercury Levels in Commercial Fish and Shellfish*. <http://www.cfsan.fda.gov/~frf/sea-mehg.html>.
2. Institute of Medicine <http://www.iom.edu/CMS/3788/23788/37679/37686.aspx>.
3. USDA *National Nutrient Database*. http://www.ars.usda.gov/main/site_main.htm?modecode=12354500.

% Fatty Acids in Cooking Oils

In order of ω -3 EFA α -Linolenic Acid (ALA)



Saturated
 Monounsaturated
 (omega6)LA
 (omega3)ALA



RELATIVE ANTIOXIDANTS IN FOODS*

Given as PERCENT of average daily intake (2 mmol of antioxidant)

Daily antioxidant requirements have not been established.

2014

NOTE: Some antioxidant may not be adequately quantified in the assay
(for example, sulfur-based antioxidants in onions or garlic & lycopene in tomato are not assessed).

Ordered by Antioxidant Concentration (highest to lowest in each category)	
Food (with some serving size examples)	Percent of Average Daily Intake
FRUIT (medium size)	
SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)	
Pomegranate (3 oz ~ ½ pomegranate)	300%
Prunes	65%
Grape (3 oz ~ 20 red grapes)	36%
Orange (3 oz ~ ½ orange)	29%
Plum	27%
Date	26%
Lemon	26%
Pineapple	26%
Kiwi	23%
Raisins	21%
Grapefruit (3oz~1/3 grapefruit)	21%
Fig, dried	19%
Lime	18%
Papaya (3 oz ~ ½ papaya)	16%
Apricot	13%
Mango	9%
Apple (3 oz ~ ½ apple)	7%
Banana (3 oz ~ 1 banana)	5%
Pear (3 oz ~ 1/3 pear)	5%
Cantaloupe	4%
Watermelon	1%
BERRIES	
SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)	
Dog rose	1000%
Blueberry/bilberry-Farm grown	200%
Blackcurrant	180%
Strawberry-Farm grown	172%
Blackberry-Farm grown	153%
Raspberry	77%
Gooseberries	36%
BEANS	
SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)	
Green	47%
Pinto/black	29%
Peanut/peanut butter	27%
Soy	21%
Black eyed peas	16%
Lentils	12%
Kidney bean	10%
Chick Pea	6%
Pea	3%
NUTS	
SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)	
Walnuts	525%
Sunflower seed	135%
Almond	8%
Cashew	6%

Relative Antioxidant in Food (continued)	
VEGETABLES	SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)
Chilipepper	62%
Kale	59%
Red cabbage	47%
Orange/yellow pepper	46%
Parsley	43%
Artichoke, leaves	42%
Red/green pepper	41%
Brussels sprout	29%
Spinach	25%
Asparagus	21%
Celery	20%
Artichoke, heart	17%
Onion	17%
Broccoli	10%
Lettuce	9%
Tomato	8%
Cauliflower	6%
Corn	5%
Eggplant	4%
Cabbage	2%
Squash	2%
Cucumber	1%
Zucchini	0.5%
ROOTS & TUBERS	SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)
Ginger	94%
Red beet	50%
Sweet potato/yam	6%
Potato	2%
Carrot	1%
CEREAL/GRAIN	SERVING SIZE EQUALS 3 OUNCES (3 oz = slightly less than ½ cup)
Barley	27%
Millet flour	21%
Corn flour	15%
Barley flour	15%
Oatmeal	15%
Rye flour	12%
Wheat flour(wholemeal;3oz ~one slice bread)	8%
Rice	4%
Wheat flour (white)	3%
HERBS	SERVING SIZE EQUALS 1 TEASPOON
Clove	650%
Allspice/pimento	140%
Cinnamon	140%
Rosemary	93%
Thyme	88%
Marjoram	75%
Oregano	63%
Basil	43%
Ginger	31%
Nutmeg	28%
Vanilla	14%
Pepper, black	12%
Jalapeno	11%
Garlic	3%
Poppy seed	0.4%

*Adapted from Halvorsen BL, et al. Journal of Nutrition, vol. 132, p461, 2002 & Dragland et al. Journal of Nutrition, vol.133, p1286, 2003.

Courtesy of Retina Foundation of the Southwest, Dallas, TX

Also available on www.retinafoundation.org

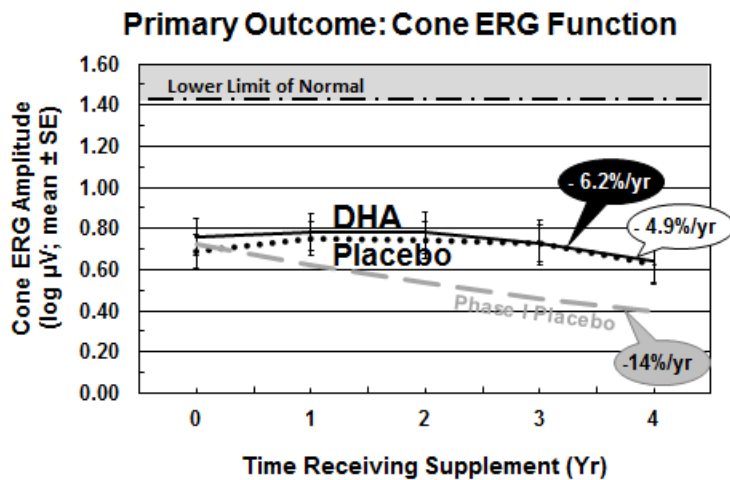
60 patients – ages 7 to 31yrs - early stage X-linked RP

Randomized to corn/soy oil placebo or 30 mg DHA / kg bodyweight / day

One ½ gram capsule /15 pounds; 3-to-18 capsules /day; about 2 pats butter /day

600 to 3,600mg DHA /day.....Breast-fed infant ~25 mg DHA /kg /day

DHA in Red Blood Cells averaged 2.7% in placebo vs 10.9% in DHA-supplemented patients (4-fold increase)



No significant differences between placebo and DHA groups for Cone ERG function (primary outcome), Rod ERG, visual acuity, or fundus appearance.

38% less loss of Peripheral and Total Field Sensitivity in DHA group

High dose DHA poses NO SAFETY RISK; No severe adverse events associated with treatment

Adverse events minimal although Gastrointestinal discomfort should be monitored at high dose DHA



Hoffman et al. JAMA Ophthal 2014; Wheaton et al. IOVS in press.