

## Essential Fatty Acids (EFAs)

### Recommended intake of essential fatty acids:

Age	Linoleic acid	Linolenic acid	DHA	DHA+EPA
<i>Food and Agriculture Organization/World Health Organization, 2008: AI as % of total kcal<sup>1</sup></i>				
0-6mos	0.2-0.3%	0.2-0.3%	0.1-0.18%	
6-24mos	3-4.5%	0.4-0.6%	10-12mg/kg	
2-10y	≥2.5%	≥0.5%		2-4y: 100-150mg/d 4-6y: 150-200mg/d 6-10y: 200-250mg/d
>10y		>0.5-0.6%		
<i>European Society for Pediatric Gastroenterology and Nutrition: Acceptable Intakes<sup>2</sup></i>				
Premature Infants	385-1540mg/kg 350-1400mg/100kcal	≥55mg/kg 50mg/100kcal	12-30mg/kg	

### Enteral nutrition to provide at least 3% kcal from linoleic and at least 0.5% from linolenic:<sup>3</sup>

Calorie Level	Linoleic acid goal (g/d)	Linolenic acid goal (mg/d)	Oil supplement options*
1000kcal/day	3.3g	560mg	½ T. corn + ¼ t. flax or 1 T. + 1t. canola or 1 t. safflower** + ¼ t. flax or 1+½ t. walnut
1200kcal/day	4g	670mg	¾ T. corn + ¼ t. flax or ½ t. safflower** + 1 T. canola or 1+¾ t. walnut
1500kcal/day	5g	830mg	¾ T. corn + ½ t. flax or ½ T. safflower** + ¾ t. flax or 2+⅛ t. walnut
2000kcal/day	6.7g	1100mg	2 t. safflower** + ½ t. flax or 1 T. corn + ½ t. flax or 2+⅛ t. walnut
2500kcal/day	7.3g	1400mg	2 t. safflower** + ¾ t. flax or 1 T. corn + ¾ t. flax or 1 T. corn + 1 T. canola or 1 T. walnut
3000kcal/day	10g	1700mg	1 T safflower** + ¾ t. flax or 1 T. + 1 t. corn + ¾ t. flax or 1 + ½ T. walnut

\*Note there are many possible combinations of oil.

\*\*Assumes high linoleic safflower oil, which can be hard to find in retail stores

### Parenteral nutrition lipid requirement (using 20% lipid emulsion of Intralipid)<sup>4</sup>

Premature infants: 2.5mL/kg/day or 0.5g/kg/day (to provide minimum LA intake 0.25g/kg/day)

Infants and children: 1mL/kg/day or 0.2g/kg/day (to provide minimum LA intake 0.1g/kg)

### Sources of Essential Fatty Acids<sup>i</sup>

Source	Amount	Weight (g)	Total Fat long chain	Linoleic acid (mg)	Linolenic acid (mg)	Kcals
Flax oil <sup>ii</sup>	1 ml	0.9	0.9	130	480	8
Canola oil	1 ml	0.9	0.9	170	80	8
Walnut oil	1 ml	0.9	0.9	480	90	8
Safflower oil, High Linoleic	1 ml	0.9	0.9	670	0	8
Safflower oil, Oleic (common)	1ml	0.9	0.9	110	0	8
Corn oil	1 ml	0.9	0.9	480	10	8
Soybean oil	1 ml	0.9	0.9	450	60	8
Sesame oil	1 ml	0.9	0.9	290	0	8
Peanut oil	1 ml	0.9	0.9	290	0	8
MCT oil <sup>iii</sup>	1 ml	0.9	-	-	-	7.7
Margarine <sup>iv</sup> (soybean based)	1 tsp	4.7	~3	~800-1000	~70-100	~30
Mayonnaise <sup>iv</sup> (soybean based)	1 tsp	5	~3	~1350	~240	~30
Salad Dressing <sup>iv,v</sup>	1 tsp	~5	1-2.5	~450-1100	~70-160	10-20

<sup>i</sup> Data from <https://metabolicpro.org> unless otherwise noted. Accessed 9.13.22

<sup>ii</sup> Linseed oil is also called flax oil and is available at health food stores.

<sup>iii</sup> Data from <https://www.nestlehealthscience.us/brands/mct-oil/mct-oil-hcp>. Accessed 9.13.22.

<sup>iv</sup> Data from <https://fdc.nal.usda.gov/fdc-app.html#/food-search>. Accessed 9.13.22.

<sup>v</sup> Salad dressings include full-fat Ranch, French and Italian dressings; Italian tends to be lower in fat.

#### References:

<sup>1</sup>Joint FAO/WHO expert consultation. Interim summary of conclusions and dietary recommendations on total fat & fatty acids. Nov 2008. <https://www.fao.org/3/i1953e/i1953E.pdf>. Accessed 9.13.22.

<sup>2</sup>Agostoni C, et al. Enteral nutrient supply for preterm infants: Commentary from the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition Committee on nutrition. JPGN. 2010;50(1):85-91. DOI: 10.1097/MPG.0b013e3181adaee0

<sup>3</sup>MetabolicPro database. <https://metabolicpro.org>. Accessed 9.13.22.

<sup>4</sup>Lapillonne, et al. ESPGHAN/ESPEN/ESPR/CSPEN guidelines on pediatric parenteral nutrition: Lipids. Clin Nutr. 2018;37:2324-2336. DOI:10.1016/j.clnu.2018.06.946