

Differentiate with **DHA**...the Smart Omega-3!

## How Much Omega-3 DHA Should Be In Fortified Foods?

### Why fortify with Omega-3?

There is a significant body of scientific evidence relating to both the function of the Omega-3 essential fatty acids and their benefits for good health. However, Omega-3 intakes are generally low in developed nations (<50 mg/day)<sup>1</sup> and often lower in urban areas, compared with rural areas.<sup>2</sup>

Most fish, particularly oily fish, are a great source of Omega-3. However, for many reasons children and adults do not consume enough fish to reach desirable levels. In the United Kingdom 74% of the population eat no oily fish<sup>3</sup>, and approximately 75% of the Australian Population and 80% of the general New Zealand population consume fish less than once a week<sup>4</sup>.

So is it better to keep saying, "eat more fish" and hope that people will eventually respond, or is it more helpful for alternative food sources of Omega-3 DHA and EPA to be made available? If consumption of just 2 slices of Omega-3 enriched bread will more than double the daily intake of these nutrients for 50% of the Australian population<sup>1</sup>, surely this is a safe and effective way to help people consume sufficient Omega-3 to prevent problems of insufficient intake.

### How Much Omega-3 Is Enough?

Before addressing how much Omega-3 DHA manufacturers should include in fortified/functional foods, it is important to understand what our intake needs are. As much of the scientific evidence relating to Omega-3 fatty acids has occurred in the last few years, at the time of publication, there were no government approved Recommended Daily Intakes (RDI's) set for the Omega-3 group of Polyunsaturated Fatty Acids (PUFA's) anywhere in the world.

There exists however, an array of advisory information from world experts and authorities, which seem to be converging upon similar targets for Adequate Intakes (AI) of these essential fatty acids. Some of these are listed in finite quantities (e.g. mg or g/day) and others are expressed as a percentage of a typical 2000 kCal daily dietary intake. In such cases, we have used the conversion that each g of fat is equivalent to 9 kCal.

Despite the scientific evidence identifying that Omega-3 DHA+EPA play the most significant role in good health, some of these recommendations do not differentiate between the major three Omega-3 fatty acids: ALA, EPA and DHA (Table 1)

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Table 1  
Recommended Omega-3 Intakes

International Authority	Recommended Omega-3 Intake (mg/day)		
	Total	ALA	EPA+DHA
ISSFAL <sup>5</sup> , 2004	-	1556	500
UK SACN <sup>6</sup> , 2004	2000	-	450
US FDA <sup>7</sup> , 2004	1760	1600	160
Japan Draft <sup>8</sup> , 2005*	2400	-	-
NHMRC, 2006 <sup>9</sup>		1050	520*

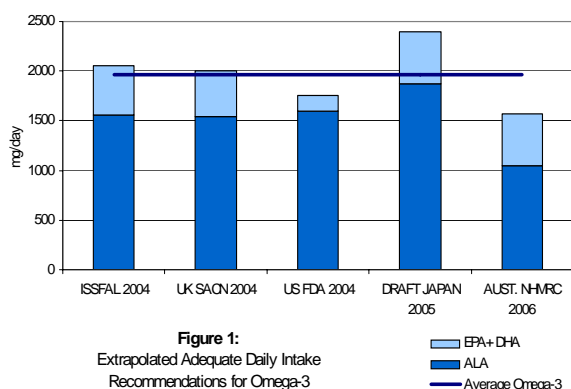
\*Averaged across age/gender specific recommendations

However, when these are extrapolated to “fill in the blanks” quite a consistent result is achieved (Table 2).

Table 2  
Extrapolated Omega-3 Intakes

International Authority	Recommended Omega-3 Intake (mg/day)		
	Total	ALA	EPA+DHA
ISSFAL, 2004	2056	1556	500
UK SACN, 2004	2000	1550	450
US FDA, 2004	1760	1600	160
Japan Draft, 2005	2400	1942	458
NHMRC, 2006	1570	1050	520

This is represented in Figure 1 below.



**Therefore, in the absence of government or otherwise formally approved guidelines or advice, it should be nutritionally sound to use the ISSFAL 2004 Adequate Intake of approximately 500 mg/day of DHA+EPA and 1,556 mg/day of ALA<sup>5</sup>.**

### How Much Omega-3 Should I Add?

It is important for both legal/regulatory and marketing reasons that food manufacturers choose appropriate levels of fortification. A recent article in Choice Magazine<sup>10</sup> titled ‘Is it Food or Medicine? Good health out of a packet of processed food? Don’t believe it.’ highlights the need for caution. Too little and you may invite investigation by the authorities for misleading the consumer and consumers may also view this as a token effort or marketing gimmick. Too much and you may run into increased sensory impact, cost barriers and possibly even contributing to an overdose situation with some nutrients.

In markets where levels of fortification are not specified, the proposed fortification levels should pass this “test of reasonableness”, but there is some precedence to consider. In the US, the NNFA recognizes that a minimum nutritional requirement may be necessary to ensure that food products bearing health claims have some dietary merit, and thus, takes the position that most food products bearing health claims should meet minimum nutritional standards. Currently, FDA’s rules mandate that food products bearing health claims must contain 10 percent or more of the daily value (“DV”) for vitamin A, vitamin C, iron,



calcium, protein, or fiber, per reference amount customarily consumed (i.e. per serve)<sup>11</sup>.

**This would suggest that 10% of a nutrient's Adequate Daily Intake per serve of food is a good place to start. In the case of Omega-3 DHA+EPA, 50 mg/serve equates to 10% of ISSFAL's recommended Adequate Intake.**

Nutritionists would consider that a serve of food contributing 10% of the AI makes a significant dietary contribution of that nutrient and the inclusion of a few serves of foods containing 50mg of Omega-3 DHA+EPA will make a significant contribution to the total daily intake. Foods containing 50 mg or more of Omega-3 DHA+EPA will more than double the intake of these nutrients for around 50% of the Australian population.<sup>1</sup>

In the case of some food products, there may be a nutritional case for greater than a 10% delivery.

For example, the US FDA's rules mandate that food products bearing the claims "High", "Rich In" or "Excellent Source Of" must contain 20% or more of the daily value ("DV") for protein, vitamins, minerals, dietary fiber or potassium per reference amount (i.e. per serve)<sup>11</sup>. Such nutrient content claims may be used on meals or main dishes to indicate that this product contains a food that meets that definition.

Similarly, the Canadian Food Inspection Agency mandates that food products bearing the claims "Very High in" or "Excellent Source Of" must contain 25% or more of the RDI for the nutrient (except vitamin C) per reference amount (i.e. per serve)<sup>12</sup>.

Food Standards Australia New Zealand (FSANZ) also permit a claim that a food is a "good source" of a vitamin or mineral if a reference quantity (i.e. a serve) contains no less than 25% of the RDI or Estimated Safe and Adequate Daily Dietary Intake (ESADDI) for that vitamin or mineral<sup>13</sup>.

In ready made or prepared meals, which are portion controlled to be a complete meal, there will be limited opportunities to build on the Omega-3 consumption in this meal. As such, it may be more nutritionally responsible, technically possible and economically viable to increase this dosage to 25%

of an Adequate Daily Intake. The same may equally apply for more nutraceutical or supplement style foods (e.g. Yakult).

**For Omega-3 DHA+EPA, a reasonable proposition would be 25% of a 500 mg/day Adequate Daily Intake, being 125 mg/meal.**

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