

Why are DHA and ARA so important for infant nutrition?



The latest nutrition research shines a spotlight on DHA and ARA for healthy growth and development

Nutritional lipids during early life

Docosahexaenoic acid (DHA) and arachidonic acid (ARA) longchain polyunsaturated fatty acids (LCPUFAs) play a central role in the development and function of the brain, eyes and immune system during infancy.^{1,2} Breast milk is the gold standard for infant feeding and naturally contains both DHA and ARA, typically with ARA levels higher than those of DHA.^{3,4} Experts in infant nutrition endorse the presence of both DHA and ARA in infant and follow-on formula during this critical window of development.^{5,6,7,8}

Regulatory requirements

Regulatory requirements for infant and follow-on formula are established to ensure that infants who are not breastfed have access to safe and nutritionally suitable breast milk substitutes. Since 1996, the addition of DHA and ARA to infant formula was optional in the EU. When DHA was added, ARA was too, as regulatory requirements stated they should be used in combination, at a ratio of 1:1 to 1:2, to mirror the composition of breast milk and align with scientific evidence. However, a new EU regulation has changed requirements regarding the DHA and ARA composition of infant and follow-on formula.⁹ While the new regulation stipulates that DHA will be mandatory in infant and follow-on formula at 20 mg – 50 mg DHA/100 kcal (0.33% – 1% of total fatty acids), ARA will remain an optional nutrient. The new EU regulation, which will

become mandatory in February 2020*, diverges from the composition of breast milk, permitting infant and follow-on formula marketed in the EU to supplement with higher levels of DHA than those typically reported in breast milk and without the need to add ARA, which is always present in breast milk.

Internationally-recognized pediatric and nutrition experts call for both DHA and ARA to be added to infant and follow-on formula. A primary reason for this is that breast milk, the gold standard for infant nutrition, always includes DHA and ARA, with ARA levels typically higher than those of DHA.^{10,11} Furthermore, although there are many studies that have evaluated clinical outcomes associated with DHA and ARA supplemented infant formula, there is a lack of clinical research regarding the safety and suitability of infant and follow-on formula with the mandatory levels of DHA without the addition of ARA.^{12,13,14,15}

*2021 for infant and follow-on formula containing protein hydrolysates

Developing infant nutrition products – what you need to know

Breast milk

Breast milk is the gold standard for infant nutrition. For mothers who cannot or choose not to breastfeed, infant and follow-on formulas are made available to ensure that the most nutritionally complete substitute possible is made available for infants that are not breastfed. Breast milk composition is used as a reference for the formulation of breast milk substitutes.



Genetics

Infants with a gene linked to low ARA synthesis may be at a greater risk of asthma, eczema, other allergic diseases and possibly suboptimal cognitive development.¹⁶ Reduced synthesis of DHA and ARA associated with such genetic variants are reported in approximately 30 percent of the EU population and may be even higher in Asia and Mexico.^{17,18,19} Personalized nutrition solutions are needed to identify which infants require additional ARA supplementation. Until then, it is recommended that infant formula manufacturers continue to add ARA in combination with DHA.



Key takeaways

- There is insufficient data to confidently support the notion that infants fed formula containing only DHA (without ARA) will result in long-term developmental outcomes that are similar to those of their breastfed peers
- At this point, it is difficult to understand if infants who are not receiving ARA through infant formula or follow-on formula will grow and develop in the same way as those who are breastfed or receiving ARA through fortified formula
- Experts therefore strongly advocate for clinical studies to determine the nutritional adequacy and safety of infant and follow-on formula containing DHA at the higher levels mandated in the new EU regulation, without the concomitant addition of ARA

dsm-firmenich: specialists in infant nutrition solutions

dsm-firmenich is the global innovation leader for science-backed nutritional products and services. It offers a complete portfolio of nutritional ingredients that meet the highest safety and quality requirements, including DHA omega-3 and ARA omega-6, fully customizable premixes, as well as regulatory, scientific, technical, application and marketing services. As the science and regulatory landscapes are continuously evolving, dsm-firmenich monitors the latest nutrition science and regulatory changes to help its customers navigate how nutrition information will impact future product development.

For more information about how dsm-firmenich can support you in the development of infant nutrition products for optimal early life nutrition, contact us [here](#).

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