

Are there any benefits of organic infant formula compared to non-organic infant formula?

What is organic infant formula?

If an infant formula is labelled as organic, it means that at least 95% of its ingredients of agricultural origin have been produced organically. For infant formula based on cows' milk and goats' milk, these ingredients include milk products (whey, lactose, whey protein, skimmed milk powder and galacto-oligosaccharides), vegetable oils (palm oil, coconut oil, rapeseed oil, high oleic sunflower oil and sunflower oil), soy lecithin and maltodextrin.

The legislated standards for organic food production (European Commission, 2007) aim to establish a sustainable management system for agriculture that:

- Sustains and enhances the health of soil, water, plants and animals;
- Contributes to a high level of biological diversity;
- Makes responsible use of emergency and natural resources and respects high animal welfare standards;
- Produces 'high quality' products using processes that do not harm the environment, human health, plant health or animal health and welfare.

In practice, this means avoiding artificial fertilisers and pesticides, no routine use of antibiotics for animals, no use of genetically modified organisms (GMOs), use of crop rotation and other forms of husbandry to maintain soil fertility, and use of only a limited number of products and substances in food processing.

Organic infant formula, as with all certified organic food products, must include on the product label the identifying code of the [UK organic control body](#) which certifies them and they may also add a logo too (Box 1).

Box 1: Organic food labels



Since the UK has left the EU, the EU organic logo (below) on UK organic food is optional. You may also therefore see this label too:



Organic standards govern the way that the relevant ingredients in the infant formula are *produced*, and not any aspect of the end product.

Are there any nutritional differences between organic infant formula and non-organic infant formula?

There are no significant differences in the nutritional composition of organic and non-organic infant formula, because all infant formula must conform to the same strict compositional requirements, governed by UK law (The Food for Specific Groups regulations, 2020). The difference between organic infant formula and non-organic infant formula relates to how the ingredients are produced.

Are there any nutrition or health benefits of organic infant formula compared to non-organic infant formula?

As all infant formula must meet the same strict compositional requirements, there should therefore be no differences in health and nutrition outcomes despite differences in the production methods of the ingredients.

Although the fatty acid profile of organic milk is more desirable than that of non-organic milk (Srednicka-Tober, 2016; see this FAQ: [‘What is organic milk and does it confer any benefits compared to non-organic milk?’](#)) the fats in infant formula are sourced mainly from vegetable oils, with fish, fungal and algal oils providing long and very long chain polyunsaturated fatty acids (LCPUFA) including mandatory docosahexaenoic acid (DHA). Differences in the fatty acid composition of milks from organic and non-organic farming systems do not therefore translate into differences in organic and non-organic infant formula because the majority of fats in infant formula do not come from milk.

Similarly, any differences in micronutrient concentrations in organic milk compared to non-organic milk are mitigated in organic and non-organic infant formula by the regulatory requirement that the nutrients in infant formula fall within specific parameters (The Food for Specific Groups regulations, 2020). This means that regardless of any compositional differences in the constituent ingredients used, there will be no clinically significant differences in the nutritional composition of the final processed product.

Is organic infant formula less subject to agricultural contamination than non-organic infant formula?

We could not find any research on agricultural contamination of infant formula or other infant milks. Considering milk protein is a core ingredient in infant formula made from cows’ milk or goats’ milk, it is relevant to note that all cows’ milk is subject to a maximum residue limit (see this FAQ: [‘What is organic milk and does it confer any benefits compared to non-organic milk?’](#)).

The extent to which organic production methods make a difference to fertiliser and pesticide residues in milk, is unclear (see this FAQ: [‘What is organic milk and does it confer any benefits compared to non-organic milk?’](#)) added to which any differences in the concentration of pesticide residues in organic and non-organic milks are irrelevant to infant formula given that regulations control their concentration (The Food for Specific Groups regulations, 2020); infant formula cannot contain residues of individual pesticides at levels exceeding 0.01 mg/kg, with maximum levels for some toxic individual pesticides set at lower levels than other foods.

Are there any environmental benefits of using organic infant formula compared to non-organic infant formula?

As milk protein is the main ingredient in infant formula made from cows' milk or goats' milk, claims that organic milk is better for the planet, wildlife and animal welfare (Soil Association, 2021) might be expected to also apply to products made from organic milk. We have reviewed the evidence in our FAQ ['What is organic milk and does it confer any benefits compared to non-organic milk?'](#), and conclude that organic production systems are likely more sustainable and better for the environment than non-organic systems, but there is no evidence of an effect on animal health and welfare.

Any differences in the environmental impact of using organic and non-organic infant formula need to be considered in the context of the overall damaging effect of the infant milk industry on the environment. A study that compared the carbon footprint of infant milks compared to breastfeeding (Karlsson, 2019) found that one kilogram of infant formula adds between 11 and 14kgs of CO₂ of greenhouse gases (GHG) to the earth by the time it is used, which translates to an estimated 200kg of CO₂ equivalent GHG emissions per infant fed on infant formula for the first six months of life instead of exclusive breastfeeding (Whitmee et al, 2015). Joffe et al (2019) estimated that in the UK, carbon emissions saved by supporting mothers to breastfeed instead of using infant milks would equate to taking 50,000 to 77,500 cars off the road each year.

How much does it cost to buy organic infant formula compared to non-organic infant formula?

Whilst all infant formula available on the UK market comply with the UK regulations, they vary widely in price (see our report ['Costs of infant formula, follow-on formula and milks marketed as foods for special medical purposes available over the counter in the UK'](#)). Unlike organic milk which is more expensive than non-organic milk (see this FAQ: ['What is organic milk and does it confer any benefits compared to non-organic milk?'](#)), organic infant formulas do not command a consistently higher price than non-organic alternatives. Among infant formula, a higher price generally reflects the addition of non-essential ingredients and a higher spend on marketing.

Conclusions

Strict regulations governing the composition of infant formula mean that there are no clinically significant nutritional differences between organic and non-organic infant formulas, and correspondingly no added health or nutrition benefits. It seems unlikely that organic infant formula contains fewer agricultural contaminants than non-organic infant formula; in particular it is important to note that pesticide residues are strictly limited by law in all infant formula. Given that milk protein is the key ingredient of infant formula made from cows' milk and goats' milk, it is relevant that organic milk production is likely more sustainable and better for the environment than non-organic milk production. However, any environmental benefits of organic versus non-organic infant formula need to be considered in the context of the overall damaging effect of the infant milk industry on the environment.

References

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