Letter to the Editor

Response to the George Kent editorial

re GOOD QUESTIONS 10: "Given our concern about viruses, what should be done about the absence of immune factors in infant formula?"

A response to the George Kent editorial by Maureen Minchin

A very interesting beginning to a long overdue discussion. However, I would disagree on two points.

Firstly, the framing of the question. What should be done about the absence of (helpful) immune factors in infant formula? If reframed. as what *CAN* successfully be done to make infant formula approach the immune power of breastmilk, the answer is simple: nothing. An ultra-processed food powder can never become a living tissue. And it may be safer not to try. Breastmilk's live cells, microbes, enzymes, antibodies, thousands of bioactive and interactive components can never be replicated, even if breast milk's nutrient mix could someday be produced by industrially modified human breast cells. At the simplest level, preventing the growth of pathogens in infant formula is difficult, and relies on dryness of the powder to prevent multiplication within the tin of any organisms present in the tiny amounts allowed--say, the almost unavoidable B. cereus spores. Any viable microbes found in an immune-enhanced mix may well on the whole present threats rather than be of benefit.

And a second point of disagreement is the idea that industry has not addressed the obvious competitive advantage of breastmilk's immune properties. It has.

Throughout the 20th century, industry marketing had concentrated on claiming that formula exactly matched breastmilk's nutritional composition, while distancing it from cows' milk. Ludicrous untrue diagrams showed the equivalence of the amounts of protein, fats, carbohydrates and minerals etc, while adding to the image a thin extra layer for "enzymes and antibodies" in breastmilk. (See p.262, *Milk Matters*).

Few thought those antibodies very important in the milk, though colostrum was valued initially. Many more were prepared to believe that any live cells in breastmilk would be damaging, as a major American company circulated educational videos promoting the idea that breastmilk was a serious risk for HIV transmission. Breast milk banks closed globally. Why take the risk when formula was supposedly nutritionally equivalent to breastmilk?

But in the 1990s, the marketing emphasis rapidly changed, from nutritional equivalence, to immune protection. The 1980s creation of an international society for human milk research and the publications this engendered, along

with WHO's increasing awareness and the development of global campaigns such as BFHI, had begun to highlight breastmilk's immune properties. Whether in response to this challenge or not, ever since a few nucleotides (5 to breastmilk's13) were included in an American company's infant formula in 1989, claims of immune effectiveness have been either openly stated – where regulations do not prohibit overt statements – or clearly implied, by massive industry marketing. This shift in marketing tactics, to claim immunity benefits for the most expensive formulas, has ramped up, highlighting, inter alia, the addition of omega 3 fatty acids, oligosaccharides (2, though breastmilk has closer to 200) and milk fat globule membrane fragments. Many mothers now believe – because they are told, and regulators do not prevent or contradict it - that formula now matches breastmilk in providing immune ingredients of benefit to their babies. Meanwhile, higher rates of infection and cancer continue in formula fed infants, and some of their mothers die early thanks to reproductive cancers and inflammatory diseases like diabetes, the risk for which breastfeeding reduces.

Of course, if the question is what has actually **been done** to try to introduce live immune factors to formula, we would need to discuss in depth the addition of shelf-stable bacteria ("probiotics"), supposedly capable of colonising infant GI tracts. Adding probiotics to this complex food powder is something industry has tried with debatable success. Scientists learned that such bacteria do not thrive without their preferred foodstuffs, and so things such as pectin and inulin (where they are sourced is not stated) have been added to many formulas. In some cases, this may have resulted in a slightly less unfavourable microbiome, though one still markedly deviant from the breastfed norm. It is still debated whether this is of any use to full-term infants, though there is some evidence suggesting that probiotics may be worthwhile for those preterm infants unable to access human milk in any form. Industry-funded studies can usually find some evidence of a benefit over previous formulas, *though never over breastmilk*. Independent research has yet to prove that probiotics do more for formula than increase its price and provide another excuse for advertising it.

The expense and effort to create the belief that formula has helpful immune properties has clearly been worthwhile in terms of profit and parental persuasion. However, scientists in an NNI workshop I cite on p.465 in *Milk Matters* were aware that the addition of nucleotides increased the price of formula without adding any benefit, and I would expect this to prove true of quite a few other additives. All of which, coming from somewhere in the human food chain, may prove to be relevant to the universally acknowledged increasing tide of food intolerances and allergies.

All of these developments are discussed and fully referenced in the searchable pdf of my book *Milk Matters: infant feeding and immune disorder*. This is strongly recommended by many experts as an eye-opening read. As long as I continue to be able to afford the website costs, you can download it FREE from http://www.infantfeedingmatters.com