Journal of Dairy Research

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Editorial

Cite this article: Knight CH (2024). It's milk, Jim, but not as we know it!. *Journal of Dairy Research* **91**, 371–372. https://doi.org/10.1017/S0022029925000226

Received: 20 February 2025
Revised: 19 April 2025
Accepted: 20 April 2025

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It's milk, Jim, but not as we know it!

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I am aware that 'Trekkies' all over the world will be saying to themselves, 'Ah, but neither Mr Spock nor Bones actually ever said that' and it's true, the 'It's Life Jim' phrase is usually attributed to The Firm and their hit song, 'Star Trekkin'. According to 'genuine' Star Trek legend, '*Milk was a creamy white emulsion produced from the mammary glands of several mammalian species, including the Earth cow and the Klingon targ*'. Basically, they got it right (apart from the targ!) whereas in recent years there has been a strong desire to redefine the word milk to include numerous plant-derived drinks. Now, however, if you are looking for grammatical accuracy you need to be aware that EU regulations stipulate that the term 'milk' cannot be used in sales or marketing to describe a purely plant-based drink. Hence, products such as 'barista drinks', and terms such as 'non-dairy', 'dairy substitute' and 'dairy alternative'. Copying milk is big business and growing fast, or so it would seem, with a projected increase of 79% between 2021 and 2028, compared with a 39% increase in the global dairy market over the same period. How well do you understand percentages? A UK quiz show posed this question for a Jackpot prize: '*At a convention of left-handers only one person in a room of 100 people was right handed, so left-handers constituted 99% of the group. How many left-handers would need to leave for this figure to drop to 98%?*' The question was posed as one that could only be answered correctly by 1% of the population. The contestant answered 5 and lost the Jackpot, since the actual answer is 50 (if you don't believe me, simply think about the single right-hander being 1% having to increase to 2% and the answer becomes obvious). Marketeers are well aware of the magical properties of percentage figures, when to use them and when to avoid them, so would probably not add that the increase in non-dairy drinks as a percentage of dairy sales is from 2.2 to 2.8% over the same time period or, expressed in absolute terms, substitutes are projected to increase by 15.5 and dairy by 350 b$. Suggestions about the imminent demise of dairy would seem to be exaggerated! Nevertheless, the topic is important from several points of view: should plant-based drinks be regarded as substitutes (ie something that could be used in place of milk), can they be thought of as 'natural', are they healthy and environmentally friendly, would their adoption improve animal welfare, do they represent an honest attempt to improve consumer choice and satisfaction or an exploitation of consumer naivety, are they technologically similar or dissimilar to milk, are they a welcome or unwelcome competitor and, ultimately from our point of view as dairy scientists, should they be regarded as within or outside the scope of this Journal. Deciding that some subjective answers might be found at point of sale (so this is written from a UK perspective), I visited a medium-sized supermarket, a corporate local convenience store and a village corner-shop. All three stocked non-dairy drinks, but in the case of the corner-shop it was, literally, just three cartons from one supplier (one each of oat drink, soya drink and almond drink). At the other end of the spectrum, the supermarket had a considerable variety of products occupying significant shelf space. On closer examination almost the only actual addition to the product base was coconut drink, and this one was quite interesting. For one thing, manufacturers and retailers were prepared to include the word 'milk' on some coconut drinking products, perhaps because of the historical and culinary existence of coconut milk and cream. In addition, many of the processed non-dairy products (cheese and yogurt imitations, desserts) were coconut based. Perhaps someone could tell me: is this because of processing suitability, or cost? My recollection is that when non-dairy drinks first appeared on supermarket shelves they were placed directly adjacent to the dairy section. That was no longer the case on my visit and instead they were to be found in a 'Free From' chilled section (close to dairy, but on a separate aisle) and also at the other end of the store, sharing aisle space with long life fruit juice and dairy products. The sharing concept also applied to the Free From section, where lactose-free dairy products were located, and even to the product itself: there was just one example of a hybrid plant/dairy milk. Retailers, like marketeers, are clever and know their consumers, so it would appear that the market has differentiated such that those who wish to purchase non-dairy do not tend to visit the dairy section. Consumers are perhaps less clever: does it not occur to them that long-life products do not also need chilled space? Or are they not at all worried by the environmental cost of keeping fresh products cold? This exposes one of several major differences between plant drinks and dairy: in the UK and many other countries milk is best as a fresh product. Back to the shelves, and to a third and increasingly significant category of product, which I shall call specialist dairy. A great deal of supermarket shelf space was given over to milk shakes, coffee-based milk drinks, milk-based 'exercise drinks', milk-based meal replacers

and, especially, milk-based 'protein drinks', to an extent I could not have forseen when plant drinks first appeared. Even the corner shop had a few of this type. I have the distinct impression that dairy companies and their marketeers have learnt from the plant sector. Scanning the shelves, only one plant product mentioned 'health' or 'healthy', and that was in the product name and was not repeated in any of the descriptive text. A similar comment applies to 'natural': this was not mentioned. This contrasts with the original plant drink concept, where products were definitely portrayed as both healthy and natural, one oat brand in particular portraying milk as unnatural because it was intended for calves, not humans. My interpretation for this change of direction would be that these products are targeting a consumer base that are actually far from naive, and likely to read lists of ingredients! In a similar vein, animal welfare and environmental security were only used as selling points for the plant products to a very limited extent, and not at all by the major brands. Again, consumers are probably aware of such aspects as the water burden of almond growing and the benefits of local sourcing, which is far more the case for milk than for plant drinks. Where claims were made, it was by 'specialist' brands, one in particular being a pea-based drink. Unlike coconuts, almonds and soya, peas (and also oats) are widely grown in the UK and so can be sourced locally, like milk. The pea brand was pushing boundaries by effectively using the word milk in its name (the 'I' became a dot). It's packaging placed considerable emphasis on green credentials, the product having gained an A rating for its '*Product Environmental Footprint*' provided by a commercial assessment company. This same rating was also awarded to soya, coconut and almond products produced by a company that is arguably the brand leader. Their packaging makes no mention of this, but then they are owned by a dairy company! This exposes a second major difference: to a very large extent, milk is marketed by a relatively small number of very large multinationals, whilst the plant drink sector comprises two or three major suppliers (including the one just mentioned) and in addition a very large number of small producers. This, however, is false diversity, as there are only really the four product bases. One marketing strategy that did feature quite heavily was protein. A number of the plant drinks made play of this, for instance with claims of providing up to 50 g of protein. Technically true, but very misleading, since the whole of the 1 litre carton would need to be drunk to obtain that much, and fermented dairy products such as Skyr and Quark can deliver twice as much. The pea drink mentioned above also described itself as 'high protein', 2% being higher than some, I suppose. This is an interesting strategy: take a feature on which you can be criticised (three of the four main plant-based drink types have very low protein content, soya being the exception) and manipulate it to turn it into a desirable attribute. The majority of plant drinks should not be regarded as 'milk substitutes' because they do not provide the same nutritional value as milk, but I shall highlight one that claims, erroneously in my view, to do just that. It is a coconut-based drink described as 'Free from Milk' (so milk appears in the name, this time the 'I' becoming a palm tree!) and targeted specifically at children from one year of age (its name also incorporates the word 'kids'). Energetically it is similar to milk, and its fat content and composition (high in saturates) is not unlike whole milk, but it provides only around half of the protein. Like many, it is calcium fortified, but makes no specific claim for this, in contrast to the pea drink which claims to supply 50% more calcium than milk. This is a vexed issue, and I would suggest that we really need a much better understanding of how much calcium is being absorbed from fortified drinks, since the classical literature clearly described the higher bioavailability of dairy-derived calcium. The local convenience store shed no additional light on the non-dairy topic, essentially being just a smaller version of its 'big brother'. Possibly the ratio of non-dairy to dairy was lower here, but it is very difficult to judge anything from aisle space given the very different shelf lives of fresh milk and long-life drinks. My overall impression would be that non-dairy drinks have established some relatively limited market share without greatly impacting fresh milk sales, and at the same time specialist milks have expanded perhaps to a similar extent as non-dairy. The major suppliers of non-dairy seem to be fairly responsible in terms of the claims that they make for their products, 'substitute' having all but disappeared, but the same cannot be said for some of the smaller, specialist brands. Is there scientific evidence available to confirm or contradict these thoughts? Watch out for a recently-submitted paper from Poland which compares consumer attitudes in different European countries: it's still under review so I cannot divulge content except to say that there is a general resonance with my own impressions. I can also draw considerable comfort from a recent consumer survey by the Agricultural and Horticultural Development Board (AHDB) in the UK. Focused on GenZ (consumers born between 1997 and 2012 and so now aged 18 to 27), the survey reported 98% of this group choosing to consume dairy (this was not a direct comparison with non-dairy drinks) and in their food choices (which were heavily influenced by social media) prioritising healthiness, protein and energy contents and, specifically for dairy, vitamin B12 and calcium. No surprises here, but what was perhaps a little more surprising was that salt, sugar and fat contents were not seen as especially important. The report also revealed a trend away from vegan and vegetarian diets, with 20% of adopters having subsequently returned to meat and dairy. On the strength of their findings, AHDB have partnered with British Universities and Colleges Sports to launch the Milk Every Moment social media campaign to, in their words, '*empower the next generation by creating a positive association between milk consumption and sporting performance within the university and college community*'. I hope it succeeds, but I note that we have been here before, the UK dairy industry having at various times been prime sponsors of major sporting events and competitions in football, cycling and others. And so to my final question: should we, as a dairy research journal, accept submissions that deal primarily or exclusively with 'dairy alternatives'? This is actually not my decision, since this is one of the last Editorials that I shall write. So in closing, may I welcome to the Editor's chair Prof Nick Jonsson, who has recently moved from a Professorial role at the University of Glasgow into industry. I have known Nick for many years and am absolutely sure that he will make an excellent job of maintaining and further developing the Journal when he takes over in April. With or without plant-based drinks!

https://doi.org/10.1017/S0022029925000226 Published online by Cambridge University Press