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Plant-based dairy alternatives in Ireland: identifying best choices for consumers and the planet

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Consumers are increasingly switching to plant-based dairy alternatives (PBDA) for environmental sustainability[1]. Dairy products are important sources of protein, calcium, iodine, and vitamin B12 for the Irish population[2], whereas PBDA have variable nutritional composition. The aims of this study were to compare nutritional composition of PBDA marketed in Ireland with dairy counterparts; identify the most nutritionally equivalent plant-based beverage to dairy milk and compare the environmental impact of both.

A survey (online and in-store) of grocery outlets (92% of Irish market share) was conducted in summer 2023. Data collected included labelling information (brand, nutritional content, and organic status) of PBDA products; and micronutrients added to fortified low-fat dairy milks. The PBDA products were compared with the nutritional composition of counterpart dairy products, obtained using CoFID[3] and data collected. Greenhouse gas emissions (GHGe; kgCO_2eq/100g) and water use (L/100g) in the production of dairy milk and the most nutritionally equivalent plant-based beverages were compared using Foodprint[4]. SPSS (version 25) was used for statistical analysis.

Out of 214 PBDA identified, 72% (*n*153) were alternatives to milk, 14% (*n*30) to cheese and 14% (*n*31) to yoghurts. A total of 32% (*n*68) PBDA were unfortified (no added micronutrients) of which just over half (54%, *n*37) were labelled organic. Of the 153 PBDA to milk, 67% (*n*102) were fortified with at least one micronutrient. The most common fortification was calcium (65%, *n*100), followed by vitamin D (59%, *n*90). Iodine was added to 22% (*n*34) of products. Fortified plant-based beverages, compared with milk, provided lower amounts of calcium and iodine (115.7mg/100ml *vs*. 142.5mg/100ml; and 7.7µg/100ml *vs* 30µg/100ml for calcium and iodine respectively). PBDA to cheese (*n*30) were lower in energy, total fat and saturated fat compared with dairy cheese but contained low amounts of protein (0.8g/100g *vs.* 24.1/100g for PBDA and dairy counterparts respectively). Among PBDA to cheese, 60% (*n*18) were fortified; 37% (*n*11) with vitamin B12 and 30% (*n*9) with calcium. Unfortified products contained negligible amounts of micronutrients. Of the 31 PBDA to yoghurts, only soya-based (71%, *n*22) products were comparable to dairy yoghurts in terms of protein (4.0g/100g *vs*. 4.5g/100g, respectively). Coconut-based products (26%, *n*8) compared to dairy yoghurts provided over nine-fold higher saturated fat (6.7g/100g *vs*. 0.7g/100g, respectively). The majority (84%, *n*26) PBDA to yoghurts were fortified with calcium and one product was fortified with iodine. GHGe were lower for soya-based beverages compared to milk (0.09kgCO_2eq/100g *vs.* 0.15kgCO_2eq/100g, respectively), however water use was higher (29.7L/100g *vs.* 0.64L/100g).

Due to protein content, fortified soya-based products represent the best PBDA choices nutritionally in Ireland, where such beverages are environmentally comparable with dairy milk. Micronutrient fortification, in terms of nutrients and amounts added, was identified as a key factor in ensuring the adequacy of PBDA.

References

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