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Changes in the declared nutrients and price of plant-based milk alternatives in UK supermarkets between 2020 and 2023

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Cows' milk (CM) has a relatively standard nutrient composition over time[(1)] and is an important source of protein and micronutrients, including iodine, calcium and vitamin B^{12}in UK diets[(2,3)]. In contrast, the nutrient composition of plant-based milk alternatives (PBMA) is rapidly evolving, dependent on new product formulations, plant bases, processing methods and fortification. Although cheaper, volume sales of CM are declining while volume sales and PBMA market share is growing[(4)] fuelled by product positioning as functional milk equivalents that are healthier, better for the environment and animal welfare. Previous work showed that PBMA and CM are not nutritionally equivalent[(3)] so shifting consumption patterns could pose nutritional risks, particularly in vulnerable groups. The aim of this study was to identify changes in the declared nutrient composition and price of PBMA and CM between 2020 and 2023.

Prices and nutrient profiles for all fresh CM and PBMA from UK supermarkets (representing 73% market share), were recorded in March 2023. Mean price and nutrient composition was calculated by plant base and compared with equivalent values from July 2020[(3)].

Average fat and saturated fat content of PBMA increased by 1.6% and 1.0% respectively, although they remained lower in fat (1.73g/100 ml; range:1.57–1.87g/100ml) and, in most cases (except coconut-based PBMA), saturated fat (0.40g/100 ml; range:0.24–1.44g/100ml) than CM (2.29g/100 ml, 1.42g/100ml). Average protein content of PBMA increased by 3.5% but remained lower in protein (1.20g/100 ml; range:0.49- 2.85g/100ml) than CM (3.59g/100ml). The average sugar content of PBMA decreased 24.2%. PBMA were lower in total sugars (2.34g/100 ml; range:1.43–3.52g/100ml) than CM (4.79g/100ml), but unlike lactose in CM, sugars in PBMA are considered free sugars. PBMA fibre content increased 43.9% (0.55g/100 ml; range: 0.35- 0.7g/100ml). CM does not contain fibre. 78% of PBMA were fortified, compared with 57% in 2020. 31% of PBMA were fortified with iodine compared with 4% in 2020, although fortified PBMA still contained less iodine (26.2µg/100 ml; range: 22.0–29.9µg/100ml) than CM (31.4µg/100ml). Of fortified PBMA, the declared calcium (122mg/100 ml; range:119–128mg/100ml) and vitamin B^{12} content (0.43µg/100 ml; range: 0.40–0.59µg/100ml) increased 5% and 13% and was similar to CM (127mg/100 ml and 0.42µg/100 ml, respectively). CM increased in price by 50% to £0.15/100 ml since July 2020, while PBMA were cheaper by 3% although still comparatively more expensive, £0.16–0.19/100 ml.

Compared with 2020, a higher proportion of PBMA are fortified, including with iodine, calcium and vitamin B^{12}, with their fortified nutrient being closer to CM concentrations. The price difference between CM and PBMA also narrowed, potentially rendering PBMA more affordable. However the composition of PBMA is highly variable, while a proportion of PBMA remains unfortified. Consumers should be aware of the implications for nutrient intakes and, to prevent low intakes when CM is replaced or removed from the diet, the need for additional dietary sources of some nutrients.

References

1. GOV.UK (2023) *Composition of Foods Integrated Dataset* [Available at: https://www.gov.uk/government/publications/composition-of-foods-integrated-dataset-cofid].
2. National Diet and Nutrition Survey (2020) NDNS results from years 9–11(2016–2017 and 2018–2019) [Available at: https://www.gov.uk/government/statistics/ndns-results-from-years-9-to-11-2016-to-2017-and-2018-to-2019].
3. Clegg M, Tarrado Ribes A, Reynolds R *et al.* (2021) *Food Res Int*, **148**.
4. Mintel (2022) *Dairy and Dairy Alternative Drinks, Milk and Cream*.