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Iodine fortification of plant-based dairy and fish alternatives – changes over a four-year period and implications for consumer health

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Iodine is an essential trace mineral and a key component of thyroid hormones, which are essential during pregnancy and infancy for brain and neurological development[(1)]. The main dietary sources of iodine in the UK are seafood and dairy products, particularly milk[(2)]. Recently, plant-based alternatives to seafood and dairy products have increased in popularity, particularly among young adults[(3)]. Unless adequately fortified, these alternatives have a lower iodine content than their animal-based counterparts[(4)]. This is a concern because consumers of plant-based alternatives are exposed to highly variable products and might be at risk of iodine deficiency. The number of alternative products on the market is rapidly expanding. Therefore, we aimed to investigate changes in the iodine fortification of plant-based alternatives to milk, yoghurt, cheese, and fish between 2020 and 2023.

This study was a cross-sectional market survey of the eight leading UK supermarkets conducted in four annual waves (2020-2023) to evaluate the availability and composition of plant-based alternatives in the UK. The market was surveyed in December each year using online store data to search for plant-based products (milk, yoghurt, cheese, fish). Data was extracted from the product nutrition information and ingredient list.

We found a 49% increase in plant-based products over the four years. During the 2023 wave, we identified 446 products, including plant-based milk (*n* 241), yoghurt (*n* 79), cheese (*n* 97) and fish alternatives (*n* 29). The number of products has grown in all categories since 2020, with the largest increase of 141% in plant-based fish alternatives. After excluding organic products, which cannot be fortified, only 35% (*n* 70) of milk alternatives, 6% (*n* 4) of yoghurt alternatives and 3% (*n* 3) of cheese alternatives were fortified with iodine in 2023, compared with 85% (*n* 169), 52% (*n* 46), and 55% (*n* 52), respectively, with calcium. Compared with 2020, there was no significant change in the proportion of milk, cheese or yoghurt alternatives fortified with iodine in 2023 ($p>0.05$). No fish alternatives were fortified with iodine. The range of iodine fortification of milk alternatives remained stable from 2020 to 2023 (11.3–45 µg/100mL), and the mean fortification all four years (25.4-27.4 µg/100mL) was lower than the average iodine concentration of conventional cow's milk (30 µg/100mL)[(5)]. Yoghurt and cheese alternatives were fortified at 22.5–45 µg/100g, similar to cow's milk cheese and yoghurts.

Our study highlights that most plant-based alternatives are not iodine-fortified and that using unfortified alternatives puts consumers at risk of iodine deficiency. Due to their increasing popularity, manufacturers of such alternative products should consider fortifying their products with an appropriate amount of iodine. Consistent and adequate fortification, accurate labelling and nutrition education are needed to help consumers make healthy and informed choices.

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