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Iodine fortification of plant-based dairy- and fish-alternative products available in UK supermarkets

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Women of childbearing age and pregnant women in the UK have been identified as mildly-iodine deficient[1–2]; this is a concern as iodine is required pre- and during pregnancy for optimal fetal brain development[3]. Plant-based diets are increasingly popular in the UK and are predominantly consumed by young females[4]. Milk and fish are rich iodine sources, and an increasing number of products are marked as plant-based alternatives. A previous survey of milk-alternative products in 2015 showed that most drinks had a low iodine concentration[5]. However, recent data on iodine fortification are lacking, especially for alternatives to other dairy products and fish. We therefore aimed to (i) assess the iodine fortification of milk-, yoghurt-, cheese- and fish-alternative products available in UK supermarkets and (ii) to model the impact consumption of such products would have on iodine intake.

Iodine (and calcium) fortification was assessed through a cross-sectional online market survey of dairy and fish alternative products available in the UK in December 2020. Information was collected from the product nutrition information and ingredient list. Iodine intake from three portions of dairy- alternatives (milk, yoghurt, and cheese alternatives) were modelled against a Reference Scenario of cows' milk products. The three scenarios were (I) fortified milk and yoghurt products and an unfortified cheese-alternative (II) fortified milk-alternative with unfortified yoghurt- and cheese-alternatives, and (III) unfortified milk, yoghurt, and cheese alternatives. Intake from the scenarios was expressed as a percentage of the WHO Recommended Nutrient Intake (RNI) for adults (150 µg/day).

A total of 304 alternative products, including milk (n = 146), yoghurt (n = 80), cheese- (n = 67), and fish- alternative (n = 11) products were identified. Just 19.9% (n = 29) of milk-alternative and 5% (n = 4) of yoghurt-alternative products were fortified with iodine, compared to 63% and 65% respectively with calcium. No cheese-alternative products were fortified with iodine but 46% were fortified with calcium. Fish-alternative products were not fortified with iodine or calcium. Iodine fortification of milk- alternatives ranged from 130–450 µg/kg, the mode value (225 µg/kg) was lower than the average iodine concentration of conventional cow's milk (300 µg/kg). Yoghurt-alternatives were fortified to 225 µg/kg, lower than that of yoghurt (413 µg/kg). The modelling showed that substitution of three portions of dairy with unfortified alternatives lead to a 97.8% reduction in iodine provided. Iodine intake from the Reference Scenario was 161.9 µg/day (108% of RNI) and for Scenario II, III and IV was 88.9 µg/day (59% of RNI), 56.7 µg/day (38% of RNI) and 3.4 µg/day (2.3% of RNI) respectively.

Individuals who consume unfortified alternatives in place of conventional dairy and fish may be at risk of iodine deficiency. Due to their increasing popularity, it is important that manufacturers of such alternative products fortify their products with an appropriate amount of iodine.

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