

Exploring the impact of plant-based diets on iodine intake in the UK population

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Project Description:

Iodine deficiency has been demonstrated in UK women of childbearing age and pregnant women – a concern as mild-to-moderate deficiency is associated with lower IQ which can affect individual and population economic potential. Though there is iodine-sufficiency in the general population, this is dependent on individual food choice as there is no salt-iodisation programme in the UK. The main dietary source of iodine is dairy, providing 51% and 33% of children's and adult intake (NDNS 2016). Vegans are at risk of deficiency and this is relevant as vegan diets are increasingly popular, with over 250,000 participants in "Veganuary" in 2019.

The EAT-Lancet diet for environmental sustainability and health includes limits for dairy intake and the UK Eatwell guide now includes dairy-alternative drinks alongside milk. While many milk-alternatives are fortified with calcium, we have shown that most are not iodine-fortified and provide <2% of milk-iodine concentration¹. Some companies now fortify milk-alternative drinks with iodine, but it is not known whether the iodine is as available as that from cows' milk. Furthermore, other dairy alternatives (e.g. yoghurt/cheese) are not fortified with iodine, thus limiting dietary iodine sources in plant-based diets. It is therefore important to model the impact a reduction in dairy intake would have on iodine intake (while accounting for intake of other sources of iodine, such as fish and eggs). As dietary patterns shift to be plant-based it will become increasingly important to be able to identify individuals in the population who are at risk of iodine deficiency. However, there is currently no suitable method for assessing iodine status in an individual, and therefore there is a need to develop a suitable tool.

The overarching aim of this PhD project is to evaluate the impact of plant-based diets on iodine intake and status in the UK. The PhD will include three main projects: (i) dietary modelling of the impact of reducing dairy-product consumption on iodine intake using cross-sectional, national food consumption surveys and several reduction scenarios; (ii) development and validation of a tool (which will be developed into an app) to assess iodine intake, in a group of omnivores, vegetarians, and vegans; and (iii) a study of the bioavailability of iodine in milk-alternative drinks through the running of a randomized, crossover balance study in consumers of iodine-fortified drinks.

References:

1. Bath SC, Hill S, Infante HG et al. (2017) Iodine concentration of milk-alternative drinks available in the UK in comparison with cows' milk. *Br J Nutr* 118, 525-532.