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Abstract

Dietary Studies, Guidelines and Recommendations: Exploring Solutions to Folate Deficiency in the United Kingdom—Parsnips as a Case Study for Dietary Intervention †

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Abstract: One in six British teenagers is clinically deficient in folate. A growing body of evidence suggests that this could be negatively impacting their short- and long-term health, with folate deficiencies being linked with conditions such as depression, colorectal cancer, and Alzheimer's disease. To address this, there is a need to identify cost-effective, culturally appropriate, and sustainable interventions to improve folate intakes across the UK. This project explores how the root vegetable parsnip could be better utilised to help improve folate intake in vulnerable populations. To understand the effects of genetics and growing conditions on nutritional quality, a microbiological assay has been used to explore the variation in folate content among different parsnip cultivars. This information will be combined with HPLC-based investigations of changes in folate content with storage, processing, and digestion to determine the difference between a parsnip in the field and a parsnip as it is purchased and consumed. In parallel, the adequacy of micronutrients provided in food system leverage points, such as school meals and hospital food, will be evaluated by analysis of recipes and meals. This will be compared to the UK government-recommended nutrient intake values to investigate whether sufficient micronutrients are being delivered in these settings. These research work packages will be combined to investigate whether the micronutrient content of meals provided in food system leverage points would be improved by the incorporation of more root vegetables, such as parsnips. Our research shows that the quantity and quality of folates in parsnip are affected by variation from farm to fork, including the variety grown, the length of storage, and how the parsnips are cooked before consumption. All of these factors should be taken into consideration when evaluating whether increased parsnip consumption could be implemented in food system leverage points like school meals to address folate deficiency in the UK. The same issues are likely to be the case for a range of other fruit and vegetables, and using the framework established with parsnip, the utility of other food-based interventions for addressing micronutrient insecurity in the UK can be assessed.

Keywords: food security; food systems; micronutrient deficiency; folate; *Pastinaca sativa*; parsnip

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