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## Nutritics GB23 database: an enhancement of the McCance Widdowson's The Composition of Foods Integrated Dataset (CoFID) database

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Food composition databases (FCDs) play a vital role in nutrition research, providing essential data on the nutritional content of food and drinks, typically obtained through chemical analyses of representative samples. FCDs are used in dietary surveys, clinical practice, research, and policy development<sup>(1)</sup>. Public Health England funds and systematically publishes a UK FCD McCance Widdowson's The Composition of Foods Integrated Dataset (CoFID). Some nutrients that are not available in the CoFID database including Omega-3 and 6, Folate, Amino Acids, and Vitamin D<sup>(2)</sup> but are available in sources including the Quadram Institute Food Labelling 2021 dataset<sup>(3)</sup> and National FCDs<sup>(1)</sup>. To address this limitation, this study aims to enrich the CoFID database with additional nutrients and create a new database known as "GB23".

A reference hierarchy was established, including the CoFID 2021 dataset, the Quadram Institute Food Labelling Dataset 2021, and National Food Composition Databases. Nutrients were gap-filled where (a) data was represented as 'N' i.e. the nutrient is present in significant quantities, but the specific amount is unknown or not reliably documented or (b) the nutrient may be present in significant quantities, but the value was not reported. Nutrients were gap-filled, and the GB23 database was cross-checked against the previous CoFID database (GB15), and any outliers were identified. Aggregate nutrient values, nutrient breakdown and variability was analysed to ensure accuracy and consistency. Analysis was completed using Excel version V16.69.1.

2,887 foods and 34 unique nutrients were updated. 7 nutrients were gap-filled due to criteria (a) and 27 were updated due to criteria (b). 43,067 micronutrients values were gap-filled, including Omega 3 (*n* 84), Omega 6 (*n* 74), Folate (*n* 28), folateDFE (*n* 19), folicAcidFortified (*n* 19), folateFood (*n* 6), 21 Amino Acids (*n* 42,837), and Vitamin D (*n* 0). 5,553 macronutrients were updated based on re-calculated values from the Food Labelling 2021 dataset on Carbohydrate, Sugar, Fat, Saturated Fat, Fibre, Protein, Salt. Folic acid values (*n* 19) were taken from manufacturer and supermarket websites, and representative values calculated. 5 FCDs (2006 Norwegian FCD, 2014 German Nutrient DB, 2015 Canadian Nutrient File, 2014 NEVO online, and 2016 New Zealand FoodFiles) were identified as sources for Vitamin D values, but additional quality checks are required. 75 photos were added to new CoFID foods. Correlation between missing nutrients, foods, and food categories was analysed, e.g. 36 products were identified as sources of missing Omega-3 and 6 values.

This study enhances the CoFID database and identifies areas for improvement, including limited Vitamin D data, and increases transparency on the Nutritics GB23 database. As FCDs are and will remain central to nutrition, analysis on their limitations and areas for enhancements are key to ensuring robust nutrition analysis, research, and policy development.

### References

1. Md Noh *et al.* (2020) *Molecules* **25**(19), 4567.
2. Public Health England (2021) McCance and Widdowson's the Composition of Foods Integrated Dataset 2021.
3. Quadram Institute (2021) Food Labelling, Food & Nutrition: National Bioscience Research Infrastructure.