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proceedings

Abstract

Exploring the Inter-Individual Variability in Response to Food in Seniors Living at Home: The MetabotypAGE Project †

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Abstract: There is a high inter-individual variability in response to food, determined by multiple interacting factors, such as age, sex, genotype, gut microbiota, eating behaviours, physical activity or socio-demographic factors. Previous studies demonstrated the possibility to predict the postprandial glycemic response to food in healthy adults based on deep phenotyping. We hypothesize that inter-individual variability may be amplified at later ages, as a result of different life trajectories and long-life exposures. The MetabotypAGE project proposes exploring the inter-individual variability in response to food in the elderly (ClinicalTrials.gov Identifier NCT06163794). The first interdisciplinary task aimed to establish the best tools and methods to recruit a large highly diverse group of subjects including those living in rural areas, and to carry out deep phenotyping adapted to the older population living at home. The second objective of MetabotypAGE is an exploratory study on 150 healthy people aged 60 to 75, who will wear a CGM for 2 weeks, during which they will eat four standardized test meals. Their post-prandial glycemia will be followed after the test meals. Furthermore, their metabolic flexibility will be assessed with a nutritional challenge test (type PhenFlex) at the clinical center. Volunteers will be extensively phenotyped with a battery of functional tests (physical aptitude, gustatory, olfactory and masticatory function, cognition, vascular function. . .), analyses on plasma, PBMC, urine, feces and saliva (biochemical, transcriptomics, metagenomics, and metabolomics) and >30 questionnaires to cover many dimensions including their metabolism, physical capacity, socio-economical status, cognitive function, digestive function, and dietary habits. The volunteers will be classified in various metabotypes using clustering methods, based on the glycemic responses to test meals. Then, the multidimentional data collected will be used (i) to characterize the metabotypes (descriptive statistics) and (ii) to explore links between postprandial response to the test meals and the subjects' descriptive data, using correlation networks based on a Gaussian Graphical Model method. The MetabotypAGE consortium combines partners with complementary skills in nutrition and health of the elderly, several clinical research structures, and local players in social action for senior citizens. Our ultimate goal is to lay solid bases for the development of tailor-made recommendations for seniors.

Keywords: deep-phenotyping; seniors; post-prandial glycemia; precision nutrition

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