

COST Action POSITVe (2014-2018)

Inter-individual variation in response to consumption of plant food bioactives and determinants involved

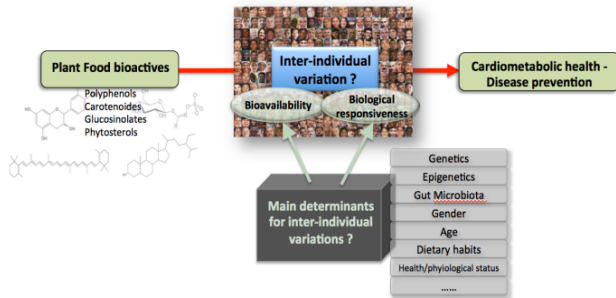


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It is of crucial importance to develop efficient strategies targeting the dietary behaviours of European consumers and the improvement the food supply to prevent cardiometabolic disease, a major public health issue. Plant foods are rich sources of a large range of bioactive compounds that beneficially affect our health. However, heterogeneity in individuals' responsiveness to these bioactives can obscure associations between dietary intakes and health, hinder the identification of health benefits for specific population groups and limit our understanding of the exact role of the different bioactives.



AIM

Build an open European scientific network to tackle the question of the inter-individual variation in response to plant food bioactives consumption

MAIN OBJECTIVES

- Identify the main determinants of the inter-individual variation
- Define strategies to stratify populations into sub-groups of metabolisers/responders
- Identify knowledge gaps, methodological needs and provide a roadmap for future innovative European research
- Foster exchanges between scientists, industry and regulatory authorities to fuel development of innovative applications and refined dietary recommendations from scientific findings

WG1: Inter-individual variation in bioavailability

- * Identify the main factors involved in between-subject variation in bioavailability of plant food bioactives
- * Improve methods and tools to assess individuals' exposure to plant food bioactives



Expected concrete outcomes:

- Inventory of factors substantially affecting absorption and metabolism for each family of bioactives
- New paradigm and related methods to stratify individuals into defined "metotypes"
- List of candidate genes variants, gut microbiota species and activities associated with the identified metabolotypes
- Consensus on the usefulness of new approaches (metabolomics) to assess individuals' exposure

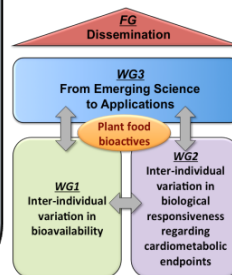
WG2: Inter-individual variation in the biological responsiveness regarding cardiometabolic endpoints

- * Assess inter-individual variation in selected clinical and molecular biomarkers of cardiometabolic risk in response to plant food bioactives consumption
- * Determine the factors of inter-individual variation



Expected concrete outcomes:

- Consensus on existing tools and methods and on emerging omics approaches to evaluate biological response to plant food bioactives
- Identification of factors beyond bioavailability (such as age, gender, physiological/health status) which affect biological responsiveness
- Pinpoint cellular pathways, candidate genes and their variants involved in inter-individual variation



WG3: From emerging science to applications

- * Integrate key findings from WG 1&2 and identify those with greatest interest for translation into applications

Expected concrete outcomes:

- New paradigm and related methods to stratify individuals according to their ability to respond to plant food bioactives intake
- Scientific basis for tailored dietary recommendations for stratified population subgroups
- Scientific basis for development of innovative and healthy foods targeted at large population subgroups
- Roadmap based on consensus for future innovative initiatives in Europe

EXPECTED IMPACT

Science

- Strengthen and structure a large European community to ensure future innovative research on plant bioactives and cardiometabolic health
- Improve evaluation of the health benefits of plant food bioactives taking into account different subgroups of responders

Industry

- Provide scientific basis for future innovative spin-off projects
- Support development of new functional/customized foods, thereby enhancing European Agro-food industry competitiveness

Public Health

- Provide scientific basis to refine dietary recommendations to optimize the health effects of plant foods for all population subgroups

POSITVe NETWORK



29 countries

>50 research institutions

7 National Federations Food & Drink sector

Disciplines: nutritionists, food technologists, epidemiologists, clinicians, microbiologists, (epi)geneticists, biochemists, molecular biologists, bioinformaticians

Cutting-edge technologies: metagenomics, nutrigenetics, nutrigenomics, metabolomics