

**Abstract**

# Dietary Assessment of Plant Food Intake Using Multi-Biomarker Panels <sup>†</sup>

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**Abstract:** This abstract introduces the ongoing project “PlantIntake” and the accompanying validation study that will start in January 2024—current status and goals will be presented at the conference. PlantIntake, a JPI-funded project, aims to improve dietary assessment of plant foods, which currently relies on self-reported intake data that are prone to bias. High levels of plant foods in the diet are generally considered healthful, but there are also plant foods that are detrimental to health. Plant-based diet indices (PDIs), developed in the United States, have improved the understanding of the associations between plant food intake and health/disease outcomes. Within PlantIntake, European PDIs will be derived to suit European dietary habits and will include aspects of variety and processing. For dietary assessment, objective measurements are desired and may be achieved with biomarkers of food intake or respective panels of them. Such multi-biomarker panels (MBMPs) are an approach to overcome the limitations of single biomarkers to obtain a more robust dietary assessment. This approach is in line with the trend in epidemiology to look at dietary patterns rather than individual foods. An inventory of putative biomarkers of plant food intake was compiled as a basis for the development of a wide-coverage targeted metabolomics method for the analysis of blood and urine samples. By applying this metabolomics method to samples from European dietary studies available within the consortium, MBMPs reflecting plant food intake and adherence to European PDIs will be developed and subsequently validated in a controlled intervention study. In a 2-week intervention period, 60 participants will be randomized into four groups. Three of these groups will receive a diet low, medium, and high in healthful plant foods, while the fourth group will receive a diet high in unhealthy plant foods. The derived MBMPs will be validated for their reliability in assessing the quantity and quality of plant food intake. In addition, the effect of confounders (e.g., age and sex), as well as dose- and time-response aspects on biomarker concentrations, will be investigated.

**Keywords:** biomarkers of food intake; plant foods; dietary assessment; multi-biomarker panels



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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

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