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Abstract

Development of a Method to Measure a Biomarker Panel Reflecting Dietary Exposure †

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Abstract: Assessment of dietary intake remains a large challenge in nutrition studies. The application of food intake biomarkers is a promising approach to complement widely used self-reported intake assessments and to improve accuracy. The development of metabolomics has enabled the discovery of many potential food intake biomarkers, but their applications are still limited. We aim to develop a semi-quantitative LC-MS/MS procedure to analyze a panel of plasma metabolites reflecting dietary exposure in a wide context. Our approach relies on a multi-analyte targeted LC-MS/MS method using a LC-QTRAP and commercially available reference compounds. A panel of 347 metabolites was selected, representing dietary intake (fruits and vegetables, coffee, tea, heat-treated food, whole-grain cereals, berries, cruciferous vegetables, and seafood) and key metabolites in the endogenous metabolism (fatty acids, amino acids, cholesterol metabolism, Krebs cycle, bile acids, and microbial metabolism) which are affected by specific diets, as well as lifestyle exposures, such as smoking and alcohol consumption. The application of this panel will help in assessing dietary exposures and their relationships to health outcomes. We will present the status of the work.

Keywords: dietary biomarkers; multiple reaction monitoring; LC-MS; plasma metabolites; endogenous metabolism

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