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TOWARD MICROBIAL FERMENTATION METABOLITES AS MARKERS FOR HEALTH BENEFITS OF PREBIOTICS (AND PROBIOTICS)

Verbeke K.¹; Boobis A.²; Chiodini A.³; Edwards C.⁴; Franck A.⁵; Kleerebezem M.⁶; Natua A.⁷; Raes J.⁸; Tuohy K.⁹; Tol R.¹⁰

¹ Translational Research Center for Gastrointestinal Disorders, KU Leuven, Belgium

² Imperial College London, UK

³ ILSI Europe, Brussels, Belgium

⁴ University of Glasgow, Scotland

⁵ Cargill, Belgium

⁶ Wageningen University, The Netherlands

⁷ FrieslandCampina, The Netherlands

⁸ KU Leuven, Belgium and Vrije Universiteit Brussels, Belgium

⁹ Fondazione Edmund Mach, Italy

¹⁰ Mead Johnson Nutrition, The Netherlands.

Introduction:

The intestinal gut microbial ecosystem produces a wide range of metabolites that interact with the host's cells and in this way influence the physiological processes in the colon.

Objectives:

To evaluate the available evidence on the bioactive, nutritional and putative detrimental properties of gut microbial metabolites to support a more integrated view of how prebiotics might affect host health throughout life.

Methods:

A literature inventory was performed that targeted evidence for the physiological and nutritional effects of metabolites, e.g. short chain fatty acids (SCFA), the potential toxicity of other metabolites and attempted to determine normal concentration ranges. Furthermore, the biological relevance of more holistic approaches like faecal water toxicity assays and metabolomics and the limitations of faecal measurements were addressed.

Results:

Existing literature indicates that protein fermentation metabolites (phenol, p-cresol, indole, ammonia), typically considered as potentially harmful, occur at concentration ranges in the colon such that no toxic effects are expected either locally or following systemic absorption. The end products of saccharolytic fermentation, SCFA, may have effects on colonic health, host physiology, immunity, lipid and protein metabolism and appetite control. However, measuring SCFA concentrations in faeces is insufficient to assess the dynamic processes of their nutrikinetics. Existing literature on the usefulness of faecal water toxicity measures as indicators of cancer risk seems limited.

Conclusions:

At present there is insufficient evidence to use changes in individual faecal bacterial metabolite concentrations as markers of prebiotic effectiveness. Integration of results from metabolomics and metagenomics holds promise for understanding the health implications of prebiotic microbiome modulation but adequate tools for data integration and interpretation are currently lacking. Similarly, studies measuring metabolite fluxes in different body compartments to provide a more accurate picture of their nutrikinetics are needed.

Keywords: Microbial metabolites, Prebiotic health benefits, Metagenome, Nutrikinetics

INTESTINAL MICROBIOTA SCREENING PLATFORM (I-SCREEN) PROVIDES INSIGHTS INTO THE EFFECTS OF FOOD INGREDIENTS AND MEDICATION ON GUT MICROBIOTA COMPOSITION AND - ACTIVITY

Vossen J.; Pálková L.; Keijser B.; Montijn R.; Schuren F.

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Introduction:

The relation between ingested products and health has been acknowledged widely. Ingested food and medicine exert their influence on the microbiota of the gastrointestinal tract. Possibilities to study these