

Unravelling health promoting microbiota-mediated mechanisms using metabolic profiling

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Abstract

Systems biology approaches such as metabolic profiling, can aid in elucidating the metabolism of dietary components by the gut microbiota, capturing biochemical signatures of microbial activity in the host metabolic system, and uncovering the mechanisms by which the gut microbiota exerts its effects. Metabolic profiling entails the application of analytical chemistry-based screening approaches to identify low molecular weight molecules (metabolites) present in biological samples. This enables characterisation of molecular phenotypes, and is particularly useful for identifying potential biomarkers. Metabolic profiling is increasingly being applied (alongside microbial profiling) to study the effects of pre- and probiotics on both the gut microbiota and host system, and their potential to impact on health.

This talk will highlight recent research where metabolic profiling approaches have been used to unravel gut microbiota-mediated mechanisms in both *in vitro* gut model systems and in human studies. These studies have enabled monitoring of dynamic microbial metabolism *in vitro*, characterisation of molecular phenotypes associated with health and disease, and biochemical signatures before and after dietary intervention. Ongoing work focussed on developing an analytical framework for functional assessment of the gut microbiota, will aid in providing further novel insights into potential gut and system health promoting biological mechanisms of action by dietary interventions such as pre- and probiotics.