

## **Diet-induced metabolic changes of the human gut microbiome: importance of short-chain fatty acids, methylamines and indoles**

### **ABSTRACT**

The human gut is a home for more than 100 trillion bacteria, far more than all other microbial populations resident on the body's surface. The human gut microbiome is considered as a microbial organ symbiotically operating within the host. It is a collection of different cell lineages that are capable of communicating with each other and the host and has an ability to undergo self-replication for its repair and maintenance. As the gut microbiota is involved in many host processes including growth and development, an imbalance in its ecological composition may lead to disease and dysfunction in the human. Gut microbial degradation of nutrients produces bioactive metabolites that bind target receptors, activating signalling cascades, and modulating host metabolism. This review covers current findings on the nutritional and pharmacological roles of selective gut microbial metabolites, short-chain fatty acids, methylamines and indoles, as well as discussing nutritional interventions to modulate the microbiome.

**Keyword:** Gut microbiome; Short-chain fatty acids; Methylamine; Indoles; Microbial metabolism; G-protein-coupled receptor; Nuclear receptor