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Metabolomics as novel non-invasive diagnostic biomarkers of GI disorders

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Diagnosis of gastrointestinal disorders requires extensive and often invasive investigations including endoscopy a biopsies and places a heavy burden, both on healthcare resources, because of the cost and on the individual, in times of disease-related disability and poor quality of life. Recently, there has been increasing interest in non-invasive biomarkers to diagnose various gastrointestinal and liver disorders. There is growing scientific interest in the investigation of metabolomics and numbers of studies have focused on the utilization of non-invasive biomarkers in the diagnosis of GI disorder in particular inflammatory bowel disease. The development of sophisticated analytical techniques has enabled the study and interpretation of changes in the fecal and breath volatile organic metabolites (VOMs) and its correlation with the pathophysiological mechanisms in the gut. VOMs are the chemicals that are the products and intermediates of metabolism and may be altered in liver diseases. Changes in fecal VOMs should reflect GI disorders and could potentially provide diagnostic information about these conditions. Multiple studies reported the differences in VOM profiles of healthy controls vs. patients with liver and other GI disorders. VOM profiles have been used to segregate patients by disease activity and the type of disease. The correlation of VOMs with microbiota is interesting and supports the hypothesis of gut microbial dysbiosis in the etiology of GI disease. This provides an important platform to explore the role of dysbiosis in gut and other GI disease pathogenesis and development of novel therapeutic targets. In future, further understanding of fecal VOMs may lead to the development of a rapid and simple point of care diagnosis and monitoring of GI disorder.

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