Appli Microbiol Open Access 2018, Volume 4
DOI: 10.4172/2471-9315-C2-015



## The role of microbial modification of bile acids for host-microbe cross talk in a cohort of Crohns disease and Ulcerative Colitis

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The GI tract is recognised as a super organ where coevolved mutualistic relationships benefits both the microbial residents and human health. For instance, while the liver is responsible for bile acid synthesis and conjugation, the gut microbiota is responsible for the diversity of bile moieties. Bile moieties are more than just emulsifiers of lipid and liberators of vitamins from dietary components. They act as signalling molecules that can exert their effects both locally and systemically, the most potent signalling molecules are those generated through microbial conversion. Here, we have examined metabolites from biological material from an Irish cohort of IBD to include Crohns disease and Ulcerative Colitis and matched controls (n=182). We have stratified, based on volunteer demographics and analysed metabolites, including bile moieties, hormones and cytokines in these patients. We link bile modifications with bile acid signalling and the incidence of bile acid diarrhoea (BAD) in these patients. We show that BAD is elevated in incidence of Crohns disease irrespective of BMI and that this incidence is due to increased levels of microbial produced secondary bile acids and to aberrant hormonal signalling but not absorption. Taken together, these data indicate that bile acid signalling is altered among Crohns disease sufferers with an elevation in bile acid diarrhoea irrespective of BMI in re-sectioned individuals.

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