Results:
Prebiotics are food ingredients and supplements, currently all carbohydrates, which bring about selective changes in the microbiome and metabolome of the gut with positive consequences for health. The meaning of the term prebiotic is still being debated and new definitions are being proposed. Since 1995 when the concept was first defined, there has been an evolution of molecular microbiological and metabonomic methods that allow us to take a highly detailed view of the microbiota and what it is doing. Concomitantly with this, our view of what is meant by a prebiotic is also evolving. Early studies in the field tended to focus on selectively increasing bifidobacteria and lactobacilli relative to other microbial groups. This simplistic view is no longer tenable as we identify new microbial functionalities and new targets for prebiotic intervention. However, even with a more detailed understanding of the microbial changes occurring on prebiotic consumption, it is still clear that prebiotics do not impact all populations equally and still have a markedly selective effect. Early studies also focused on the changes in microbial populations rather than changes in the metabolites produced. This too has changed over the years as we learn more. Microbial metabolites clearly have a wide ranging impact on health, together with co metabolites resulting from both microbial and human metabolic activities. Although we do not have anywhere near a comprehensive understanding of the complex cross-feeding relationships that occur in the gut ecosystem, we can see a selective effect on metabolites of prebiotics; we can identify substrates that produce distinct metabolic profiles in faecal cultures. Relating these to specific health benefits is, however, a considerable challenge. Whilst there are many studies on health benefits of prebiotics, too few of them are designed to probe the mechanistic relationships between gut microbiome, metabolome and health outcome. Traditionally the health benefits of prebiotics were thought to be mainly focussed on effects in the gut and on immune function since the large gut is the major site of prebiotic fermentation. Whilst there are data to support positive effects on gut health, recent studies have focussed more on metabolic health. Studies have shown positive effects on inflammation, insulin response and postprandial glucose levels. The role of prebiotics in lipid metabolism, obesity and satiety continues to be of interest, albeit with mixed results at the present time. This presentation will evaluate how our understanding of prebiotics has evolved and will examine recent studies on benefits to gut, immune and metabolic health.

Keywords: Prebiotics, Inulin, Gut Microbiome, Gut Metabolome, Gut Fermentation

Citation: