

Assessment of gut microbiota variation in Indian population and Impact of Fructo-oligosaccharides (FOS) on human gut microbiota in a randomized and dose-dependent study

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A pan India study involving 1004 subjects was conducted to map the Indian gut microbiota. The fecal samples were collected from eligible subjects across 14 geographical sites in India. The subjects' recruitment was done keeping 4 major categories viz obesity, age, physical activeness and food habits in mind. This study, to best of our knowledge is the first large-scale and multi-centric study involving a diverse age group in India. The data reported 993 unique gut bacteria across the Indian population. Further analysis is being carried out to identify the unique species associated with age and obesity. Role of prebiotics in promoting the beneficial bacteria has been well documented. However, there are only few studies reported on the role of prebiotics on subset of bacteria in a larger ecosystem.

In a study involving a cohort of 80, short chain Fructo-oligosaccharides (FOS) was administered to healthy, adult human participants at three dose levels viz., 2.5 g/day, 5.0 g/day and 10 g/day. The study duration (210 days) was divided into three phases (basal, dosage and follow up) comprising a total of 9 time-points involving fecal sample collection. FOS consumption increased the relative abundance of bacterial species belonging to the genera *Bifidobacterium* and *Lactobacillus*. Interestingly, consumption of FOS at higher dosage appears to promote, in contrast to maltodextrin, the selective proliferation of OTUs belonging to *Lactobacillus*.

FOS consumption increased the bacterial diversity and withdrawal of prebiotics consumption led to the reduction in the bacterial diversity. In addition to positive impact of FOS on *Bifidobacterium* and *Lactobacillus*, a significant change was also observed in certain butyrate-producing microbes like *Faecalibacterium*, *Ruminococcus* and *Oscillospira*. Positive impact of FOS on butyrate-producing bacteria and FOS mediated increased bacterial diversity reinforced prebiotics role in conferring beneficial functions to the host.