

3rd International Conference and Exhibition on **Obesity & Weight Management**

December 01-03, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

Role of pattern recognition receptors and inflammatory mediators following gut microbiota alteration in high sugar diet mediated type 2 diabetes

Bhumika Prajapati, Prasant Kumar Jena, Parth Rajput and Sriram Seshadri
Institute of Science Nirma University, India

Background: Gut microbiota modulation using antibiotics can prevent progression of high sucrose diet (HSD) mediated obesity and diabetes, through microbial metabolites, short chain fatty acids (SCFAs) and inflammatory mediators.

Aim: Present investigation was aimed to study the effect of altering the microflora of small intestine and colon in HSD rats by oral administration of antibiotics in context with obesity and insulin sensitivity.

Methods: Rats were fed HSD with or without antibiotics administration for 60 days. The fecal microbiota communities, metabolites, glucose tolerance, plasma and hepatic lipids profile, histological evaluation and gene expression were investigated.

Results: Simultaneous administration of HSD and antibiotics has shown significant improvements in glucose tolerance and obesity associated parameters like hypercholesterolemia and hypertriglyceremia as compared to HSD. The qPCR study of fecal samples showed marked increase in *Lactobacillus* and decrease in *Enterobacteriaceae* and *E. coli* in treated group, which indicated the restoration of commensal microflora in direction to improvement in obesity and insulin sensitivity. Gas chromatographic study indicated altered levels of the SCFAs such as butyrate and acetate (major source of the energy for gut epithelial) in treated group as compared with HSD. Antibiotics co-administered group showed relatively less histopathological symptoms, compared to HSD group. Treatment had decreased the gut derived Lipopolysaccharide, which further reduced Immune Receptors expression along with reduced NF- κ B activity to downregulate the expression of proinflammatory cytokines.

Future Prospects: Gut microbiota manipulation towards decreased inflammation and insulin resistance needs to be further explored for its therapeutic applications in order to treat the metabolic complications.

Biography

Bhumika Prajapati has completed her MS Pharma in Biotechnology from National Institute of Pharmaceutical Education and Research (NIPER). She is currently perusing her PhD from Institute of Science, Nirma University. She has been awarded with Jawaharlal Nehru Scholarship for Doctoral Studies sponsored by Department of Science and Technology, India. Her work is mainly focused on the Gut microflora alteration in diet induced obesity and diabetes. She has published three papers in international journals

prajapati.bhumika823@gmail.com