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Comparison of bacterial communities in complete gliadin-degraded sourdough (khamir) samples and non-degraded samples

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This study was conducted to investigate the comparison of bacterial communities in gliadin-degrading sourdough (Khamir) samples (SD2) and non-gluten degrading samples (SD1). Sixty locally fermented sourdough samples were collected from various cities of Pakistan. Gliadin degraded samples were analyzed by Fourier Transform Infrared Spectroscopy (FTIR) analysis and selected for metagenomic analysis by Illumina Miseq plate-form. It was observed that Proteobacteria (50.65%) and Actinobacteria (6.70%) phyla were in more abundance as compared to Firmicutes (42.53%) in SD2 while Firmicutes (83.44) were in more abundance in SD1 than Proteobacteria (14.97 %). 16S ribosomal RNA sequence also disclosed that Lactobacillus genera are the core genera in SD1 and SD2, 52.13 and 33.73%, respectively. However, second most abundant genera in SD1 and SD2 was Weisella (27.15%) and Psychrobacter (21.53%), respective. It was revealed that SD2 and SD1 samples have 15 and 9 different genera, respectively while 52 genera in common were present in both. Shannon and Simpson's indices indicated that SD2 had more diversity compared to SD1. Different clustering of genera was observed in SD1 and SD2 by Principal Component Analysis (PCA) graph. Contrarily, sourdough samples had different bacterial communities as compared to previous studies of other authors. This study can be helpful to apply specific bacteria consortia to develop gliadin free food product.

Biography

Hafiz Arbab Sakandar has his expertise in Food Microbiology and Nutrition. He did his masters from University of Agriculture, Faisalabad, Pakistan and PhD from Quaid-i-Azam University, Islamabad, Pakistan. He also worked as Research Scholar at McGill University, Canada. Currently he is working as Research Assistant at Jiangnan University, China. He has worked on the sourdough with special focus on Gliadin Toxicity and its effect on Caco-2 monolayers. He has published many papers in reputed peer reviewed national and international journals.

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