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Impact of a Locally-Prepared Fermented Alcoholic Beverage from Jaggery on the Gut Bacterial Profile of the Tea-Tribal Populations of Assam, India

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Abstract : The human gut is an extremely active fermentation site and is inhabited by diverse bacterial species. Consumption of alcoholic beverages has been shown to substantially modulate the human gut bacterial profile (GBP) of an individual. Assam, a major north-eastern state of India, is home to a number of tribal populations of which the tea-tribes form a major community. These tea-tribal communities are known to prepare and consume a locally-prepared alcoholic beverage from fermented jaggery, whose chemical composition is unknown. In this study, we demonstrate the effect of daily intake of the locally-prepared alcoholic beverage on the GBP of the tea-tribal communities and correlate it with the changes in the biochemical biomarkers of the population. The fecal bacterial diversity of 40 drinkers and 35 non-drinking healthy individuals were analyzed by polymerase chain reaction (PCR)–denaturing gradient gel electrophoresis (DGGE). The results suggested that the GBP was significantly modulated in the fermented-beverage consuming subjects. Significant difference was also observed in the serum biochemical parameters such as triglyceride, total cholesterol and the liver marker enzymes (ASAT/ALAT and GGT). Further studies to identify the GBP of drinkers vs non-drinkers through Next-generation Sequencing (NGS) analysis and to correlate the changes with the biochemical biomarkers of the population is underway.

Keywords : alcoholic beverage, gut bacterial profile, PCR-DGGE analysis, tea-tribes of India
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