

Identification of Microbial Community in an Anaerobic Reactor Treating Brewery Wastewater

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Abstract : The study of microbial ecology and their function in anaerobic digestion processes are essential to control the biological processes. This is to know the symbiotic relationship between the microorganisms that are involved in the conversion of complex organic matter in the industrial wastewater to simple molecules. In this study, diversity and quantity of bacterial community in the granular sludge taken from the different compartments of a full-scale upflow anaerobic sludge blanket (UASB) reactor treating brewery wastewater was investigated using polymerase chain reaction (PCR) and real-time quantitative PCR (qPCR). The phylogenetic analysis showed three major eubacteria phyla that belong to *Proteobacteria*, *Firmicutes* and *Chloroflexi* in the full-scale UASB reactor, with different groups populating different compartment. The result of qPCR assay showed high amount of eubacteria with increase in concentration along the reactor's compartment. This study extends our understanding on the diverse, topological distribution and shifts in concentration of microbial communities in the different compartments of a full-scale UASB reactor treating brewery wastewater. The colonization and the trophic interactions among these microbial populations in reducing and transforming complex organic matter within the UASB reactors were established.

Keywords : bacteria, brewery wastewater, real-time quantitative PCR, UASB reactor

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