

## Process Stability and Microbial Community Structure in Anaerobic Hydrogen-Producing Microflora from Food Waste

조지혜, 이대성, 조한샘<sup>1</sup>, 김영미, 박종문<sup>1,\*</sup>  
포항공과대학교 환경공학부; <sup>1</sup>포항공과대학교 화학공학과  
(jmpark@postech.ac.kr\*)

Biological hydrogen production from food waste has economic feasibility of environmentally-friendly energy source generation as well as waste treatment. However, continuous fermentative hydrogen production has experienced frequent system instability. In this study, the shifts in microbial community structure when the deterioration of hydrogen production occurred were investigated by comparison of the terminal restriction fragment length polymorphism fingerprinting of the 16S rRNA gene to that of reference species as well as the denaturing gradient gel electrophoresis, cloning and sequencing. The experiments showed that *Clostridium* spp. were representatives of hydrogen producing bacteria. But *Lactobacillus* spp. known to be responsible for kimchi fermentation became dominant when the hydrogen production started to deteriorate. Therefore, the decrease or cessation of hydrogen production by *Clostridium* spp. was caused by accidental bloom of *Lactobacillus* species. To prevent the growth of the lactic acid bacteria, temperature control of the food waste feedstock at 4 °C was implemented as a pretreatment step.