

Role of Indole in Microbial Fuel Cells of
Escherichia coli

한티협, 조무환, 김용규, 이진태*
영남대학교
(jtlee@ynu.ac.kr*)

Microbial fuel cells (MFCs) use bacteria as a biocatalyst to convert metabolic energy into electricity. Indole is known as an intercellular signal molecule which can influence biofilm formation and virulence. The aim of this study was to investigate a possible role of indole in electricity generation of *E. coli* microbial fuel cells. Experiments were conducted in H-type MFC with *E. coli* MG1655 and *Shewanella Oneidensis* MR-1 as a positive control. MFC with *S. oneidensis* MR-1 reached maximum power density of 34 mW/m² and open circuit potential of 0.74 V which were correlative well with the previous results. MFC with *E. coli* MG1655 produced the maximum power density of 4 mW/m² and open circuit potential of 0.55 V. It was observed that the biofilm formation of *E. coli* MG1655 was important in electricity generation. Also, indole decreased the biofilm formation of MG1655 on carbon paper and a mutant that lacked of indole production decreased the electricity generation. These results indicate that indole plays an important role in MFC performance. This work was supported by the Green Energy Education & Research Center at Yeungnam University.