

Isolation of novel CO converting microorganism using zero valent iron for bioelectrochemical system (BES)

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Carbon monoxide (CO) has been discharged from steel industry and biomass gasification process, highlighted as a feedstock for biological conversion to platform and value-added chemicals. The conventional strains for CO conversion has problems of low growth rate and high sensitivity to oxygen as well as lower conversion yield. Biological conversion of CO is conducted by specific bacteria harboring the wood-ljungdahl pathway (WL pathway) and CO-dehydrogenase. In this study, we attempted to isolate and characterize the novel CO converting strains from the river sediment using the media having the iron bead (Fe₀) as external electron source. As a result, 9 strains were isolated and most of the strains were characterized as Clostridium species. CO conversion rates and efficiencies of all 9 strains were compared, and the isolated strains were deposited to KCTC (Clostridium botulinum HN02 and Fonticella tunisiensis HN43).