

Optimization of agar saccharification for microbial fuel cell by using response surface methodology

옥진주, 박동희, 이대성*
경북대학교
(daesung@knu.ac.kr*)

A microbial fuel cell (MFC) is a device that converts chemical energy to electrical energy by the catalytic reaction of microorganisms. Using the MFC, researchers have produced electricity from various organic compounds. Recently the utilization of marine biomass as a feedstock for bioenergy production is being investigated worldwide. Among them, a macro red seaweed, *Gelidium* sp., is known to have high content of carbohydrates. Thus agar power derived from the red seaweed was used to evaluate its potentiality as a feedstock for electricity production using MFC. Chemically, agar consists of a mixture of agarose and agaropectin, whose monomeric unit is mostly galactose. To saccharify agar into soluble monosaccharides, acid saccharification method incorporated with autoclaving was used in this study. To begin with, the effects of acid type, acid concentration, autoclave temperature and time were examined individually. A response surface methodology was applied to find the optimum condition for agar saccharification using each acid. Eventually, optimum saccharification method was determined in the viewpoint of electricity production using MFC.