Effect of biological pretreatment for brown algae with study of microbial consortiums

김지현, 김지영[1], 이민우[2], 박종문[3,*]
POSTECH 환경공학과; [1]POSTECH 바이오에너지 연구소;
[2]계명대학교 화학공학과; [3]POSTECH 첨단원자력공학과
(jmpark@postech.ac.kr*)

3rd Biomass is paid more attention as a potential resource for the production of renewable biofuels and other chemical compounds. *Laminaria japonica* is a well-known representative brown algal biomass which is high productivity, cheap cost, and high carbohydrate content accounting for 60 – 67% (w/w) of dry biomass weight as well. *L. japonica* is mainly consist of these carbohydrates such as mannitol, laminaran, fucoidan, and alginate. Among these, alginate and mannitol are the major components accounting for approximately 50% (w/w) of total carbohydrates. Mannitol is easily solubilized in aqua-phase. However, alginate and larminaran is present in the solid-phase of mixture of *L. japonica* which is water-insoluble polysaccharide so that its direct fermentation is usually difficult and it also requires a high HRT for production. In this study, biological pretreatment using various microbial consortium were investigated to produce fermentable saccharides from solid-phase of *L. japonica*, which their performances were confirmed in aerobic CSTR operation system.