

Comparing the efficiency of polysaccharide solubilization by physico-chemical pretreatment for fermentation from *Laminaria japonica*

김지현, 김지영, 김영미, 박종문\*  
포항공과대학교  
(jmpark@postech.ac.kr\*)

Marine biomass is a potentially fermentable carbon resource as alternative bio-based fuel and valuable chemical compounds. *Laminaria japonica* belongs to the brown macro algae. *L. japonica* is satisfied as fuel feedstock due to high productivity and low cost. Carbohydrate accounts for 60 - 67% (w/w) of dry biomass weight in *L. japonica*, consisting of mannitol, laminaran, fucoidan, and alginate. The main structural and storage compound account for approximately 50% (w/w) of total carbohydrates are alginate and mannitol, respectively. Mannitol is highly solubilized. However, in the form of water-insoluble polysaccharide alginate is forming gel. Therefore, fermentable monomeric and oligomeric water-soluble saccharide alginate is made by pretreatment. To hydrolyze alginate, chemical process such as acid and alkali hydrolysis and physical process such as heat process can be utilized. In this study, our research team compared producing fermentable monomeric and oligomeric waster-soluble saccharide efficiency by physico-chemical pretreatment process in *L. japonica*.