

Bioethanol production from mannitol using *Serratia* sp. JMP1

문세라, 이홍순, 박종문*
포항공과대학교
(jmpark@postech.ac.kr*)

Biorefinery of marine biomass has been focused as an alternative energy production processes, and to enhance the bioethanol production from macroalgae it is needed to screen suitable fermenting microorganisms which can utilize carbon sources derived from macroalgae. *Laminaria Japonica* is one of the most abundant brown algae in Korea and could be a great source for biorefinery due to high growth rate and carbohydrate contents. Mannitol is a major carbohydrate derived from *L. japonica*, however not easily utilized by traditional fermenting microorganisms. *Serratia* sp. JMP1, isolated from the gut of turban shell, was investigated its saccharolytic activities against alginate, laminaran and cellulose; and also its fermenting ability using mannitol. *Serratia* sp. JMP1 grew slower under anaerobic condition than aerobic, while showed high specific ethanol productivity using mannitol (anaerobic: 13.0 gEtOH/g DCW; aerobic 3.2 g EtOH/g DCW). Mannitol was proved as more favorable than glucose for ethanol production by *Serratia* sp. JMP1: the maximum yield was 59.8 mg/g mannitol (aerobic) and; 214.3 mg/g mannitol (anaerobic) by 2.7 and 2.9 times higher than glucose, respectively.