

Bioethanol production from *Sicyos angulatus*, an ecological disturbance plant in Korea

이강현, 이정호, 김승희, 박철환¹, 유하영[†]

상명대학교; ¹광운대학교

(y2h2000@smu.ac.kr[†])

Sicyos angulatus, known as an invasive or ecological disturbance plant in Korea, grows indiscriminately around crops and reduces agricultural productivity, thus, the removal project is being carried out every year. In this study, enzymatic hydrolysates from pretreated *S. angulatus* were applied to bioethanol fermentation by *Saccharomyces cerevisiae* K35. Alkali pretreatment for lignin removal was carried out to improve the enzymatic digestibility of *S. angulatus*. The pretreatment conditions were determined as follows: 2% (w/w) NaOH, 121°C and 10 min. The glucan content and enzymatic digestibility of the pretreated *S. angulatus* were found to be 46.7% and 55.3%, respectively, which were improved by 2.8-fold and 2.5-fold compared to untreated *S. angulatus*, respectively. The hydrolyzed *S. angulatus* was used as a carbon source for *S. cerevisiae* K35 fermentation to produce bioethanol. The maximum ethanol production was estimated to be 41.3 g based on 1,000 g *S. angulatus*, which is a 2.4-fold improvement compared to the control group.