

Techno-economic assessment and process simulation of mixed alcohols production from brown algae through MixAlco ketonization pathway

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This study evaluates the economics of Mixed Alcohol production from brown algae through MixAlco ketonization process. The process anaerobically digests brown algae and produce volatile fatty acids (VFAs) and converts VFAs to calcium carboxylate salts by addition of calcium carbonates. The salts are then separated and dried in dewatering unit and sent to ketonization reactors. At high temperature (430 °C) calcium carboxylate salts are thermally converted into ketones and calcium carbonate. The produced ketones are hydrogenated to mixed alcohols over a Raney Nickel catalyst at 130 °C. The process units are simulated in Aspen plus v7.3 and a Techno-economic model was developed using Aspen Process Economic analyzer. The results showed that MixAlco process has a better economy through ketonization pathway compared to MixAlco ammonium carboxylate pathway.