

Development of hyper-ABE producing *Clostridium acetobutylicum* BKM19 and its genome analysis

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Solventogenic *Clostridium* naturally produce acetone-butanol-ethanol (ABE). To develop a hyper ABE producer, mutagenesis of the *Clostridium acetobutylicum* PJC4BK strain was carried out by using NTG and a hyper ABE producing BKM19 strain was isolated. The BKM19 strain produced 32.5 g/L of ABE (17.6 g/L of butanol, 10.5 g/L of ethanol, and 4.4 g/L of acetone) from 85.2 g/L of glucose in batch fermentation exhibiting the total solvent production capability 30.5% and 90.5% higher than the PJC4BK and ATCC824 strains, respectively. Genome of the BKM19 strain was resequenced by using the next-generation sequencing methods, to verify the mutations corresponding to the enhanced solvent production. [Development of Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea (NRF-2012-C1AAA001-2012M1A2A2026556); and the Advanced Biomass R&D Center (ABC) of Global Frontier Project funded by the Ministry of Science, ICT and Future Planning (ABC-2010-0029799).]