

Effects of altered membrane composition on solvent tolerance of *Clostridium acetobutylicum*

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Clostridium acetobutylicum is the best model organism of acetone-butanol-ethanol fermentation. However, butanol toxicity has been considered as the most limiting factor for achieving high butanol titer. Cyclopropane fatty acid synthase (CFA) adds methylene carbon bridge from S-adenosylmethionine across unsaturated fatty acid to form cyclopropane ring in the membrane. To achieve high butanol tolerance, CFA synthase under control of acetoacetate decarboxylase promoter was successfully introduced into *C. acetobutylicum*. Overexpression of CFA affected cell's physiology that lead to high butanol tolerance, cell rigidity, and productivity. [This work was supported by the Technology Development Program to Solve Climate Changes from the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea (NRF-2012-C1AAA001-2012M1A2A2026556); and the Advanced Biomass R&D Center of Korea (2011-0028386) through the Global Frontier Research Program of the MEST. Further support by EEWS program of KAIST and the World Class University program (R32-2008-000-10142-0) of the MEST are appreciated.]