Metabolic engineering of *Escherichia coli* for enhanced production of 1-propanol

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The 1-propanol is a next generation biofuel used not only as a gasoline substitute, but also as various industrial products such as paint and cosmetics. In terms of energy density and combustion efficiency, it is advantageous than the traditional bio-fuel, ethanol. We have previously reported an L-threonine overproducing *E. coli* TH20 strain, which was genetically modified to concentrate carbon fluxes towards L-threonine by systems metabolic engineering. The TH20 strain was further engineered for 1-propanol production. Toward this goal, novel synthetic pathway for 1-propanol production, deleting competing pathway and carbon source optimization based on the *in silico* flux response analysis was established. Additional metabolic engineering strategy of the resulting strain further improved the titer. [This work was supported by the Advanced Biomass R&D Center of Korea (ABC-2010-0029799) through the Global Frontier Research Program of the Ministry of Education, Science and Technology (MEST). Further supports by BioFuelChem, EEWS program of KAIST, and the World Class University program (R32-2008-000-10142-0) of the MEST are appreciated.].