Metabolic engineering of *Escherichia coli* for biobutanol production : amino acid to biofuel

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We applied the novel synthetic pathway to *Escherichia coli* for the production of butanol by using 2-ketoisovalerate as an intermediate. Based on the previously constructed L-valine over-producing strain of *E. coli*, in which all the known negative regulations by L-valine were removed and the carbon flux towards L-valine formation was increased, the novel pathway for the biosynthesis of butanol from 2-ketoisovalerate, the direct precursor of L-valine, was further engineered. The resulting engineered *E. coli* strain was able to produce 118 mg/L butanol by microaerobic batch culture. These results suggest that an efficient production of butanol is possible by properly assembling the synthetic metabolic pathways in *E. coli*. [This work was supported by the Advanced Biomass R&D Center (ABC) of Global Frontier Project funded by the Ministry of Education, Science and Technology. Further supports by the World Class University Program (R32-2008-000-10142-0) of the MEST were appreciated.]