

Production of n-butanol by recombinant *Escherichia coli* from mixed sugars

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Abstract

Renewable biofuel sources have attracted significant attention due to increasing fuel prices of continually depleting oil reserves, higher emission of greenhouse gases and instability of oil supply. Ethanol fuel is the most common biofuel worldwide. Nevertheless, n-butanol would be more potentially used as a next generation biofuel because it has higher energy density, lower hygroscopic, lower vapor pressure and higher flash point compares to ethanol. *Clostridium* species naturally produced n-butanol whereas the production of n-butanol is limited by the availability of the genetic tools in *Clostridium*. In the present work, we reconstructed a synthetic pathway of n-butanol in an *Escherichia coli* strain that was free of plasmids. Moreover, this engineered *E. coli* was able to produce n-butanol by co-utilization of glucose and xylose. The n-butanol yield reached up to 2.1 g/L from 20 g/L of mixed sugars.

Keywords: Biofuel; n-butanol; *Escherichia coli*; *Clostridium*; genomic engineering.