

Construction of sucrose-utilizing *Escherichia coli* K-12 strain by β -fructofuranosidases overexpression and its application for L-threonine production

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Sucrose is one of the most promising carbon sources. Here, we report a practical example of developing sucrose-utilizing microorganisms using *Escherichia coli* K-12 as a model system. The sucrose utilizing ability was acquired by introducing only β -fructofuranosidase from three different sucrose-utilizing organisms. The *M. succiniciproducens* β -fructofuranosidase was found to be the most effective for sucrose utilization. Analyses of the underlying mechanism revealed that sucrose was hydrolyzed into glucose and fructose in the extracellular space and both liberated hexoses could be transported by their respective uptake systems in *E. coli* K-12. This system can also be applied for the L-threonine production strain of *E. coli* K-12. [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.]