Construction of a sucrose-utilizing *Escherichia coli* K-12 strain by β-fructofuranosidase introduction and its application for threonine production

송찬우[1], 이정욱[1,2], 최 솔[1], 이상엽[1,*]
[1]KAIST; [2]Boston University
(cwsong@kaist.ac.kr*)

Sucrose is one of the most promising carbon sources for industrial fermentation. Here, we report a practical example of developing sucrose-utilizing platforms using *Escherichia coli* K-12. In this study, we constructed *E. coli* K-12 strains capable of uptaking sucrose by introducing β-fructofuranosidases. 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 was introduced into the engineered L-threonine production strain of *E. coli* K-12 to produce threonine from sucrose. [This work was supported by the Technology Development Program to Solve Climate Changes from National Research Foundation of Korea (Development of systems metabolic engineering platform technologies for biorefineries; NRF-2012-C1AAA001-2012M1A2A2026556) 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.]