

Production of aromatic polyesters by metabolically engineered Escherichia coli

이영준, 양정은<sup>1</sup>, 박시재<sup>2</sup>, 김원준<sup>3</sup>, 김형준, 김범준, 이혁<sup>4</sup>, 신지훈<sup>4</sup>, 이상엽<sup>†</sup>  
KAIST; <sup>1</sup>세계김치연구소; <sup>2</sup>이화여자대학교; <sup>3</sup>한화케미칼; <sup>4</sup>한국화학연구원  
(leesy@kaist.ac.kr<sup>†</sup>)

Engineered Escherichia coli strain is used to produce aromatic polyesters from glucose through one-step fermentation. Clostridium difficile isocaprooyl-CoA:2-hydroxyisocaproate CoA-transferase and evolved polyhydroxyalkanoate synthase genes are overexpressed in the engineered D-phenyllactate-producer strain. Poly(3-hydroxybutyrate-co-D-phenyllactate) copolymers, with different compositions are produced through expression of Cupriavidus necator  $\beta$ -ketothiolase and reductase genes. This is the first attempt on the one-step fermentative production of aromatic polyesters from renewable resources. [This work was supported by the Intelligent Synthetic Biology Center through the Global Frontier Project (2011-0031963) and also by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF2012M1A2A2026556 and NRF-2012M1A2A2026557) from the Ministry of Science and ICT through the National Research Foundation of Korea.]