

Effective production of (-)- α -bisabolol using metabolically engineered *Pseudomonas putida* KT2440

양정모, 조숙형¹, 연영주², 이진원[†]

서강대학교; ¹C1 가스 리파이너리 사업단; ²강릉원주대학교

(jinwonlee@sogang.ac.kr[†])

Microbial production of terpenoids has not reached the level of high-titer production due to the toxicity of terpenoids and the difficulty of inducing carbon flux to the main precursor of mevalonate pathway, acetyl-CoA. To overcome these hurdles, our previous study proposed *Pseudomonas putida* strain and ethanol as a substrate for microbial production of terpenoids. In this study, (-)- α -bisabolol, a high value-added chemical used in various pharmaceuticals and cosmetics was selected as a target terpenoid and the process of bioproduction of (-)- α -bisabolol using *P. putida* as a biocatalyst has been established. First, the efficient lower mevalonate pathway (mevalonate to dimethylallyl pyrophosphate (DMAPP) and isopentenyl pyrophosphate (IPP)) was explored and developed for the efficient supply of C5 precursors for (-)- α -bisabolol biosynthesis. Second, glucose rapidly supplying ATP was added as an auxiliary carbon source to solve the nature of the terpenoid biosynthesis pathway, which consumes a lot of ATP. Finally, the several optimizations for enhance the production of (-)- α -bisabolol was performed and the production of (-)- α -bisabolol was confirmed.