

In silico Experiments of a Capnophilic, *Mannheimia succiniciproducens* MBEL55E for the Enhanced Production of Succinic Acid

박종명, 김태용, 김현욱, 송효학, 이상엽*
한국과학기술원 생명화학공학과
(leesy@kaist.ac.kr*)

This study presents an in-depth study on the organism behavior of *Mannheimia succiniciproducens*, the cell growth rate and succinic acid production rate, under varying rumen gas conditions. Constraints-based flux analysis of the genome-scale metabolic model of *M. succiniciproducens* was employed to estimate intracellular fluxes and the exchange fluxes across the cellular system associated with the metabolism of H₂ and CO₂. Results from fermentations performed previously and constraints-based flux analyses of *M. succiniciproducens* in this study revealed that there is a limit of CO₂ level in the medium for the increment in the cell growth rate. Furthermore, uptake rates of H₂ and CO₂ from the medium have a direct relationship with one another, significantly influencing the rates of cell growth and succinic acid production as a result [This work was supported by the Korea Science and Engineering Foundation (KOSEF) grant funded by the Korea government (MOST) (No. M10309020000-03B5002-00000). Further supports by LG Chem Chair Professorship, Microsoft and IBM SUR program are appreciated.]