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A Molybdopterine Aldehyde Dehydrogenase from *Amycolatopsis methanolica*

김시욱*, Johannis A. Duine¹

조선대학교 자연과학대학 환경학과, ¹Department of Microbiology and Enzymology, Delft University of Technology, The Netherlands

Methanol-grown *Amycolatopsis methanolica* contains a molybdoprotein dehydrogenase active with aldehyde or formate esters as substrates and Wurster's Blue as artificial electron acceptor, the enzyme being named formate ester dehydrogenase (FEDH). It is reported here that the same organism contains another molybdoprotein aldehyde dehydrogenase catalyzing the oxidation of these compounds but with different substrate specificities and only using DCPIP as electron acceptor. Just like other bacterial molybdoprotein dehydrogenases, this dye-linked aldehyde dehydrogenase (DL-ALDH) consists of 3 different subunits (87, 35, and 17 KDa) and contains the cofactors FAD, molybdoprotein-cytosine-dinucleotide cofactor, Fe, and acid-labile sulphide in a stoichiometric ratio of 1:1:4:4. Ethanol served as stabilizer during purification and the enzyme was not inhibited in the presence of methanol. Structure comparison of FEDH and DL-ALDH revealed significant differences in size of the subunits and *N*-terminal amino acid sequences. Although formaldehyde is a better substrate for DL-ALDH as compared to FEDH, the still low affinity for it and the presence of several other (form)aldehyde dehydrogenases in this Gram-positive bacterium are prohibitive to ascribe a clear physiological role to this enzyme in the conversion of these compounds or the other substrates.

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Biosynthesis of Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) by *Bacillus thuringiensis* R-510

이강태* · ¹배경숙 · 이영하

충남대학교 미생물학과, ¹KIST 유전공학연구소

보조기질로서 propionate첨가시 3-hydroxybutyrate(3HB)와 3-hydroxyvalerate(3HV)를 단위체로하는 공중합체 [poly(3HB-co-3HV)]를 생합성하는 *Bacillus thuringiensis* R-510을 분리하고, propionate의 첨가에 따른 이 균주의 생장 및 공중합체 생합성의 양상을 조사하였다. 그 결과 본 균주는 첨가된 propionate의 농도 증가에 따라 cell growth의 lag phase가 연장되는 현상을 보였고, 비교적 높은 농도(>0.3%)의 propionate가 있는 조건에서도 강한 내성을 나타냈다. 특히 최적농도인 0.1%의 propionate의 첨가는 균의 생장과 공중합체 축적을 촉진하는 효과를 보였다(최대 축적을 44.5%DCW). 또한 0.1, 0.3, 0.5%의 propionate 첨가시 합성된 공중합체내 3HV moiety의 함량은 각각 32.9, 72.6, 80.2mol%로서 본 균주가 지금까지 알려진 미생물들에 비하여 3HV함량이 높은 poly(3HB-co-3HV)생성에 매우 유리한 조건을 지니는 것으로 나타났다.