

Accepted Manuscript

Biosynthesis of 4-hydroxyphenylpyruvic acid from L-TYROSINE USING RECOMBINANT *Escherichia coli* CELLS EXPRESSING MEMBRANE BOUND L-AMINO ACID DEAMINASE

HUANRU DING, WEIRUI ZHAO, CHANGJIANG LÜ, JUN HUANG, SHENG HU, SHANJING YAO, LEHE MEI, JINBO WANG

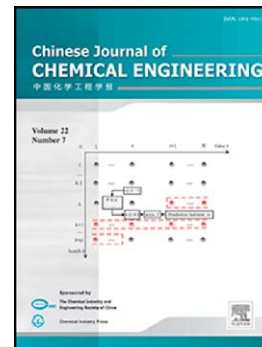
PII: S1004-9541(17)30589-X
DOI: DOI: [10.1016/j.cjche.2017.08.009](https://doi.org/10.1016/j.cjche.2017.08.009)
REFERENCE: CJCHE 906

TO APPEAR IN:

RECEIVED 17 MAY 2017
DATE:
REVISED DATE: 4 AUGUST 2017
ACCEPTED 14 AUGUST 2017
DATE:

Please cite this article as: Huanru Ding, Weirui Zhao, Changjiang Lü, Jun Huang, Sheng Hu, Shanjing Yao, Lehe Mei, Jinbo Wang, Biosynthesis of 4-hydroxyphenylpyruvic acid from L-TYROSINE USING RECOMBINANT *Escherichia coli* CELLS EXPRESSING MEMBRANE BOUND L-AMINO ACID DEAMINASE, (2017), DOI: [10.1016/j.cjche.2017.08.009](https://doi.org/10.1016/j.cjche.2017.08.009)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Biotechnology and Bioengineering

Biosynthesis of 4-hydroxyphenylpyruvic acid from L-tyrosine using recombinant *Escherichia coli* cells expressing membrane bound L-amino acid deaminase[☆]

Huanru Ding^{1,2,*}, Weirui Zhao^{1,2,*}, Changjiang Lü^{1,2}, Jun Huang³, Sheng Hu¹, Shanqing Yao²,
Lehe Mei^{1,2,**}, Jinbo Wang¹

¹ School of Biotechnology and Chemical Engineering, Ningbo Institute of Technology, Zhejiang University, Ningbo 315100, China

² Department of Chemical and Biological Engineering, Zhejiang University, Hangzhou 310027, China

³ School of Biological and Chemical Engineering, Zhejiang University of Science and Technology, Hangzhou 310023, China

[☆]Supported by the National Natural Science Foundation of China (31470793, 31670804), China Postdoctoral Science Foundation (2016M592003), the Natural Science Foundation of Zhejiang Province (LZ13B060002), and the General Scientific Research Project of Zhejiang Provincial Education Department (Y201432760).

*These authors contributed equally to this work.

**Corresponding author. Tel: +86-571-87953161; Fax: +86-571-87951982;

E-mail: meilh@zju.edu.cn (L.H. Mei)

Abstract: 4-Hydroxyphenylpyruvic acid (4-HPPA), a kind of α -keto acid, is an intermediate in the metabolism of tyrosine and has a wide range of application in food, pharmaceutical and chemical industry. Using amino acids as raw material to produce the corresponding α -keto acid is thought to be both economic and efficient. Among the enzymes that convert amino acid to α -keto acid, membrane bound L-amino acid deaminase (mL-AAD), which is anchored to the outer side of the cytomembrane, become an ideal enzyme to prepare α -keto acid since there is no cofactors needed and H₂O₂ production during the reaction. In this study, the mL-AAD from *Proteus vulgaris* was used to prepare whole-cell catalysts to produce 4-HPPA from L-tyrosine. The secretory efficiency of mL-AAD conducted by its own twin-arginine signal peptide (twin-arginine translocation pathway, Tat) and integrated pelB (the general secretory pathway, Sec)-Tat signal peptide were determined and compared firstly, using two pET systems (pET28a and pET20b). It was found that the Tat pathway (pET28a-*mLaad*) resulted in higher cell-associated mL-AAD activity and cell biomass, and was more beneficial to prepare biocatalyst. In addition, expression host B121(DE3) and 0.05 mmol·L⁻¹ IPTG were found to be suitable for mL-AAD expression. The reaction

Download English Version:

<https://daneshyari.com/en/article/6593138>

Download Persian Version:

<https://daneshyari.com/article/6593138>

[Daneshyari.com](https://daneshyari.com)