

## Supplementary Materials

### Synthesis of 4-hydroxybenzylideneacetone by Whole-Cell

#### *Escherichia coli*

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**Table S1.** Plasmids and Strain used in this study

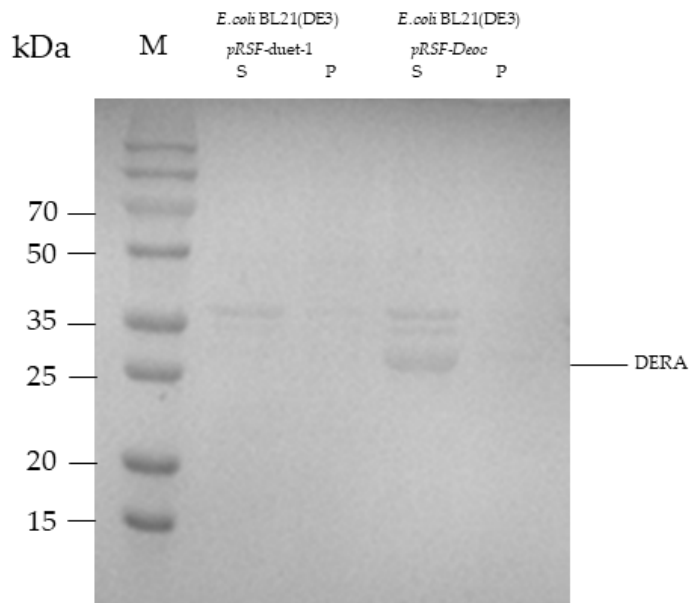
Plasmids and Strain	description	source
<i>pRSF-Duet-1</i>	double T7 promoters, RSF ori, Kan <sup>R</sup>	Novagen
<i>pRSF-Deoc</i>	<i>pRSF-Duet-1</i> carrying <i>Deoc</i>	this study
<i>E. coli</i> JM109	<i>E. coli</i> JM109 wild type	this study
<i>E. coli</i> BL21(DE3)	<i>E. coli</i> BL21(DE3) wild type	this study
strain	<i>E. coli</i> BL21(DE3)/( <i>pRSF-Deoc</i> )	this study

**Table S2.** Primers used in this study

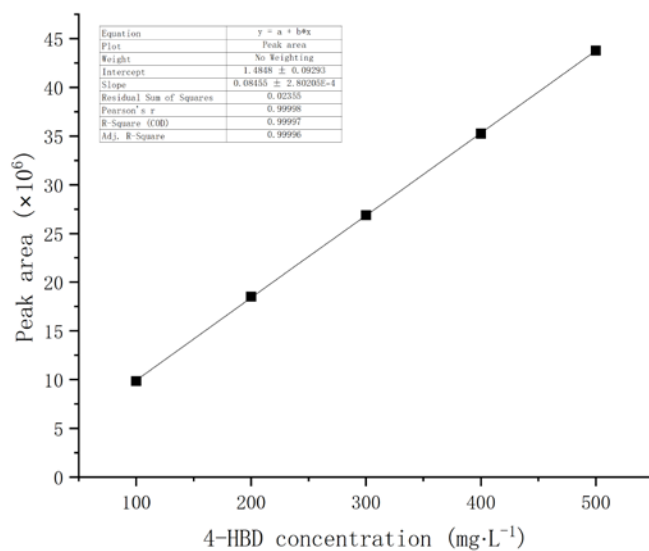
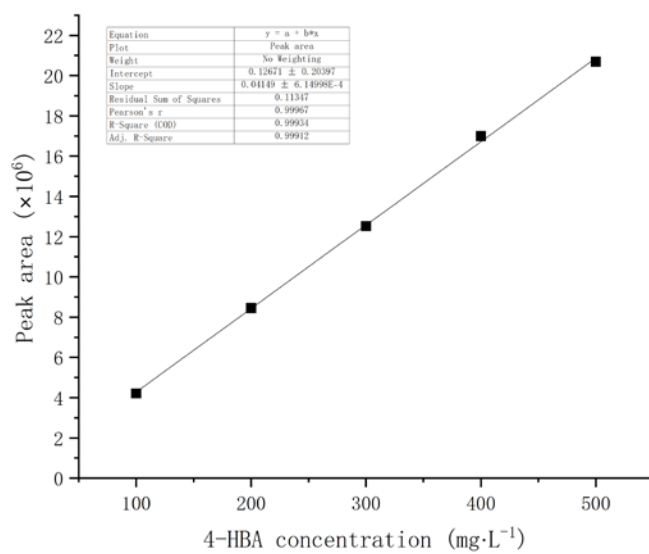
Primer	Sequence(5'-3')	Restriction site
<i>Deoc-F</i>	CGGGATCCAATGACTGATCTGAAAGCAAGCAG	<i>Bam</i> HI
<i>Deoc-R</i>	CCCAAGCTTTTAGTAGCTGCTGGCGCTC	<i>Hind</i> III

**Table S3** Gene sequence used in this study

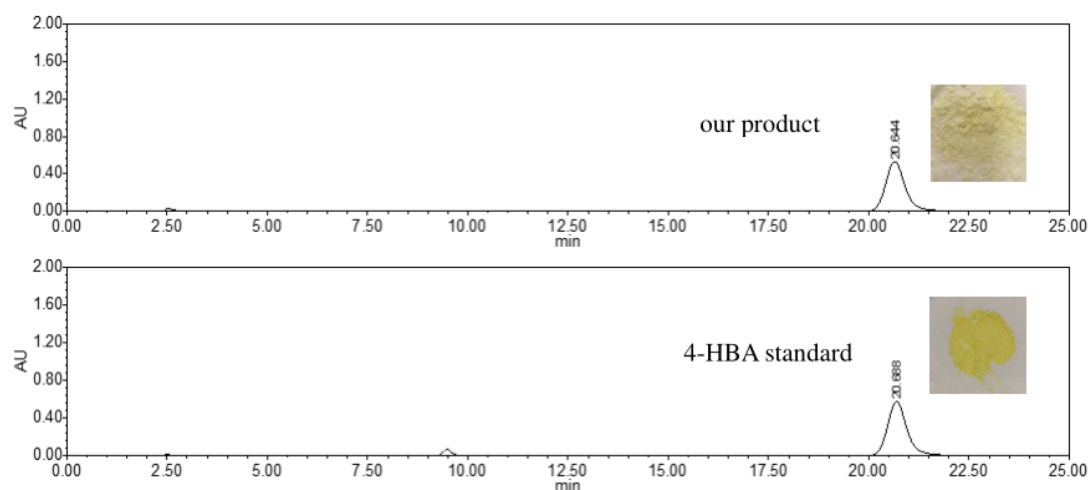
Gene name	Sequence(5'-3')
Deoc	ATGACTGATCTGAAAGCAAGCAGCCTGCGTGCACTGAAATTGATGGACCTGAC CACCTGAATGACGACGACACCGACGAGAAAGTAATTGCTCTGTGTCATCAGG CCAAAACCCCGTTCGGCAATACCGCCGCTATCTGTATCTATCCTCGCTTTATCC CGATTGCTCGCAAAACACTGAAAGAGCAGGGCACCCCGGAAATCCGTATTGCT ACGGTAACCAACTTCCCACACGGTAACGATGACATCGAAATCGCGCTGGCAG AAACCCGTGCGGCAATCGCCTACGGTGCCGATGAAGTTGACGTGGTGTTCCTG TACCGCGCGCTGATGGCGGGTAACGAGCAGGTTGGTTTTGACCTGGTGAAAGC CTGTAAAGAGGCTTGCGCGGCAGCGAATGTACTGCTGAAAGTGATCATCGAAA CCGGCGAACTGAAAGACGAAGCGCTGATCCGTAAAGCGTCTGAAATCTCCATC AAAGCGGGTGCGGACTTCATCAAAACCTCTACCGGTAAAGTGCGTGTGAACGC GACGCCGGAAGCGCGCGCATCATGATGGAAGTGATCCGTGATATGGGCGTA GAAAAAACCGTTGGTTTCAAACCAGCGGGCGGCGTGCGTACTGCGGAAGATG CGCAGAAATATCTCGCCATCGCAGATGAACTGTTCCGGTGCTGACTGGGCAGAT GCGCGTCACTACCGCTTTGGTGCTTCCAGCCTGCTGGCAAGCCTGTTGAAAGCG CTGGGCCACGGTGACGGTAAGAGCGCCAGCAGCTACTAA



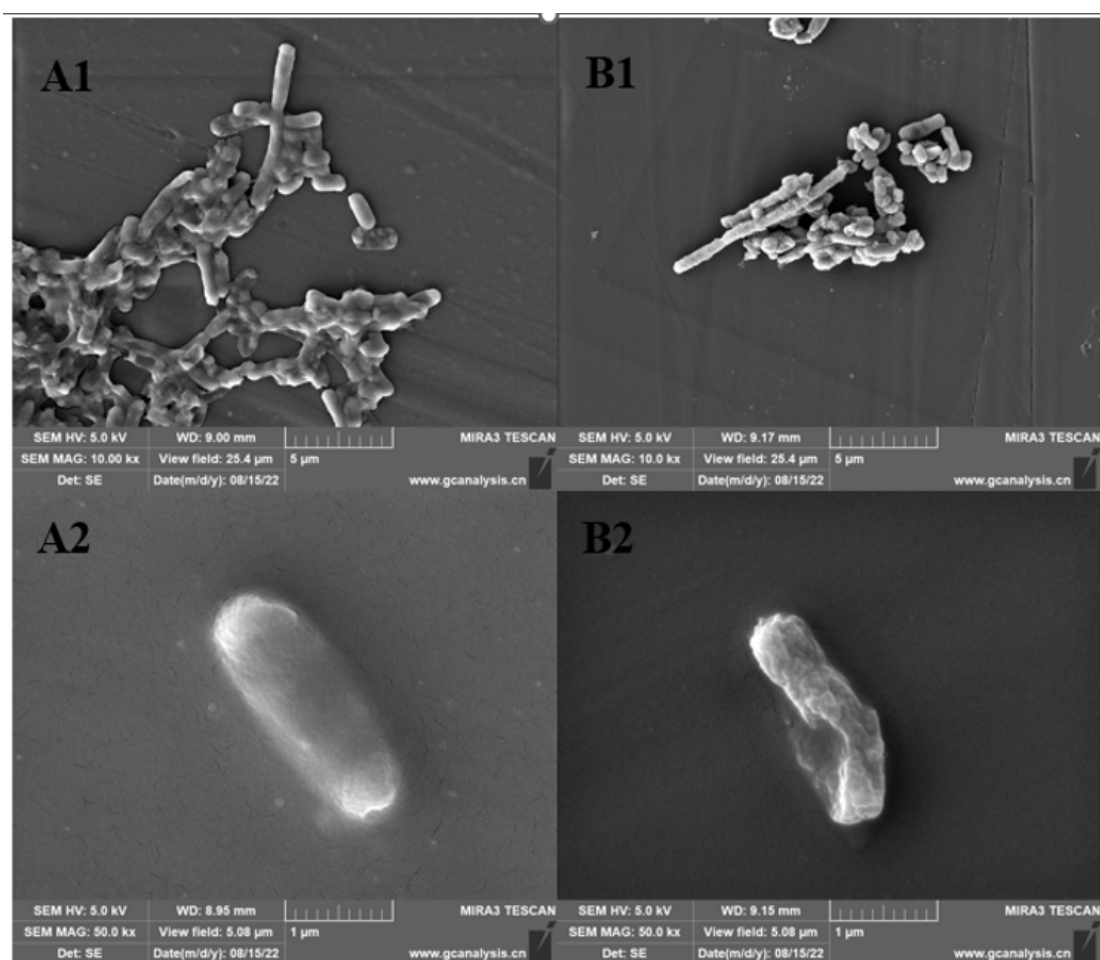
**Figure S1.** SDS-PAGE analysis of *E. coli* BL21(DE3)/pRSF-Deoc and *E. coli* BL21 (DE3) /pRSF-Duet-1 as a negative control. Lane M contains marker proteins, lanes S and P are the supernatant and precipitate of *E. coli* BL21(DE3)/pRSF-Deoc and *E. coli* BL21 (DE3) /pRSF-Duet-1, respectively; DERA (ca. 27.7 kDa) are indicated by the horizontal lines. *E. coli* BL21(DE3)/pRSF-Deoc and *E. coli* BL21 (DE3) /pRSF-Duet-1 were all induced at 20 °C with 0.8 mM IPTG.



**Figure S2.** Standard curve of 4-HBA and 4-HBD.



**Figure S3.** HPLC of our product and 4-HBA standard.



**Figure S4.** SEM images before and after the catalytic reaction. (A1,A2) SEM images before the reaction (resolution of 5μm and 1μm, respectively). (B1,B2) SEM images after the reaction (resolution of 5μm and 1μm, respectively).