Electronic supplementary information for

Efficient synthesis of Ibrutinib chiral intermediate in high space-time yield by recombinant *E.coli* co-expressing alcohol dehydrogenase and glucose dehydrogenase

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Fig.S1  Two kinds of recombinant plasmids constructed in this study.
Table S1  The enzyme activity of these two kinds recombinant *E. coli*

<table>
<thead>
<tr>
<th>Catalyst</th>
<th>Specific activity (U/g)</th>
<th>Activity (U/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em> harboring pRSFduet-1-tbadh-bsgdh</td>
<td>5.7±0.7</td>
<td>10.9±1.3</td>
</tr>
<tr>
<td><em>E. coli</em> harboring pRSFduet-1-bsgdh-tbadh</td>
<td>7.9±0.5</td>
<td>12.3±1.3</td>
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</table>
**Fig. S2**  SDS-PAGE analysis for the protein expression of recombinant *E. coli* harboring pRSFduet-1-bsgdh-tbadh.

The subunit weights of alcohol dehydrogenase and glucose dehydrogenase are approximately 38 and 28 kDa, respectively. Lane 1, molecular weight markers. Lane 2, total proteins from *E. coli* cells with plasmid pRSFduet-1. Lane 3, total proteins from *E. coli* cells with recombinant plasmid. Lane 4, soluble proteins from *E. coli* cells with plasmid pRSFduet-1. Lane 5, soluble proteins from *E. coli* cells with recombinant plasmid.
Fig.S3  HPLC analysis for the ee value of product.
Fig. S4  $^1$H NMR spectra of (S)-NBHP.