SUPPORTING INFORMATION

Synthesis of D-Sorbose and D-Psicose by Recombinant *Escherichia coli*

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1. Materials

Oligonucleotide primers were synthesized at Sangon Biotech (Shanghai, China) and listed in Table S1. KOD DNA polymerase was purchased from Toyobo Life Science (Japan). Restriction enzymes and T4 ligase were purchased from Takara (Japan). *E. coli* DH5 α [*lacZ* Δ *M15 hsdR recA*] was purchased from Gibco-BRL (Gaithersburg, MD). *E. coli* MG1655 (*rph-1, fnr*) was from lab stock. D-Glyceraldehyde, D-psicose, D-sorbose, isopropyl-1-thio- β -D-galactopyranoside (IPTG), ampicillin, Ca²⁺ exchange resin were purchased from Sigma-Aldrich (St. Louis, MO). Bio gel P-2 gel and Aminex HPX-87H column (300 $\times$ 7.8 mm) were purchased from Bio-Rad Laboratories, Inc. (Hercules, CA). XK column (100 $\times$ 2.6 cm) was purchased from GE Healthcare (Piscataway, NJ).

Table S1. Primers used in this study

Primer	Sequence
pSK-rhaD-F	5'-GCGTGGATCCAGGAACACAGAACATGCAAAACATTACTCAGT-3' (<i>Bam</i> HI)
pSK-rhaD-R	5'-TATAAAGCTTTTACAGCGCCAGCGCACT-3' (<i>Hind</i> III)
pSK-yqaB-F	5'-GCGCAAGCTTAAGGAGATATAATGTACGAGCGTTATGCAGGTT-3' (<i>Hind</i> III)
pSK-yqaB-R	5'-TATACTCGAGTCACAGCAAGCGAACATCCACG-3' (<i>Xho</i> I)

2. Supporting Figures

Figure S1. Construction of the pSK-rhaD-yqaB plasmid.

Figure S2. Detect the *in vivo* reaction mixture (supernatant) with HPLC.

3. NMR Spectra