Enhanced heterologous production of glycosyltransferase UGT76G1 by co-expression of endogenous *prpD* and *malK* in *Escherichia coli* and its transglycosylation application in production of rebaudioside

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Table S1 Detail information of fusion partners in this work

Gene	Fusion expression partner	Protein sizes (kDa)	Organism
Fh8	Fasciola hepatica 8-kDa antigen	7.7	*F. hepatica*
MBP	Maltose-binding protein	42	*Escherichia coli*
Smt3	Small ubiquitin modified	11.3	*Synthetic*
DsbA	Disulphide isomerase I	23.1	*Escherichia coli*
DsbC	Disulphide isomerase	25.6	*Escherichia coli*

Table S2 Primers used to amplify the target genes in this work

Genes	Primer sequences
UGT76G1	5' -ATGGAAAATAAAACGGAGACCACC -3'
	5' -CAACGATGAAATGTAAGAAACCAAAGA -3'
Fh8	5' -ATGCCGAGCGTTCAGGA -3'
	5' -GCTGCTCAGAATGCTCAC-3'
MBP	5' -ATGAAAATAAAAACAGGTGCACGCA-3'

	5’ -CTTGGTGATACGAGTCTGCG-3’
Smt3	5’ - ATGAGCGATAGCGAAGTGAA-3’
	5’ -ACCACCAATCTGTTCACG-3’
DsbA	5’ - ATGAAAAAGATTTGGCTGGCG-3’
	5’ -TTTTTTCTCGCTTAAGTATTTCACTGT-3’
DsbC	5’ -ATGAAGAAAGGTTTTATGTTGTTTACT-3’
	5’ -TTTACCGCTGGTCATTTTTTG-3’
prpD	5’ -ATGTCAGCTCAAATCAACAACATC-3’
	5’ -TTAAATGACGTACAGGTCGAG-3’
malK	5’ -ATGGCGAGCGTACAGCTG-3’
	5’ -TTAAACGCCCGGCTCCTTATG-3’

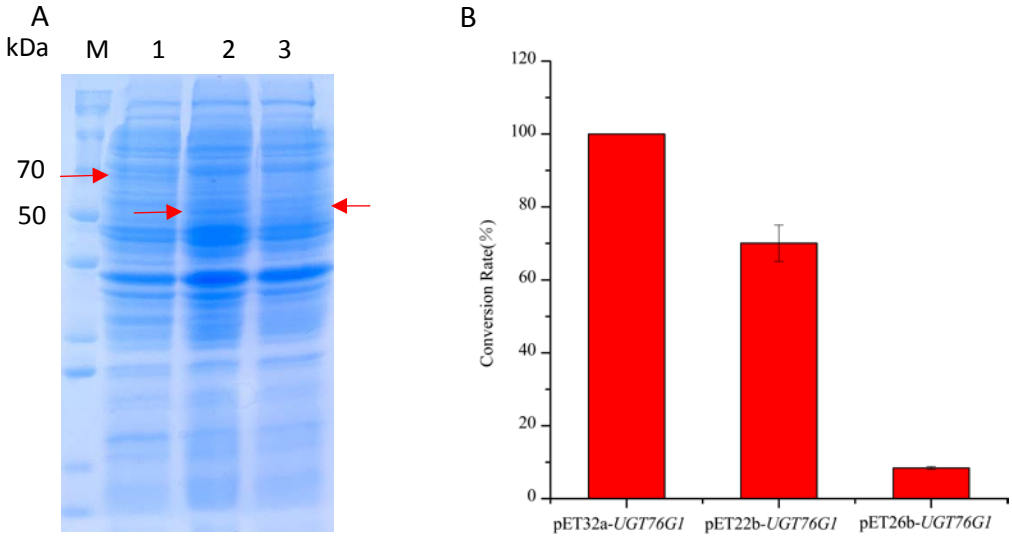

Figure S1 Expression of recombinant UGT76G1 under different plasmids in *E. coli.* A: SDS-PAGE of the whole cell lysates of different recombinant strains which harbouring different recombinant plasmids (1, pET32a-*UGT76G1*; 2, pET22b-*UGT76G1*; 3, pET26b-*UGT76G1*), M means marker of protein molecular weight; B: The different conversion rates from St to RA by the crude enzymes of the different recombinant strains in 12 h. Data are presented as mean±SD (n=3).

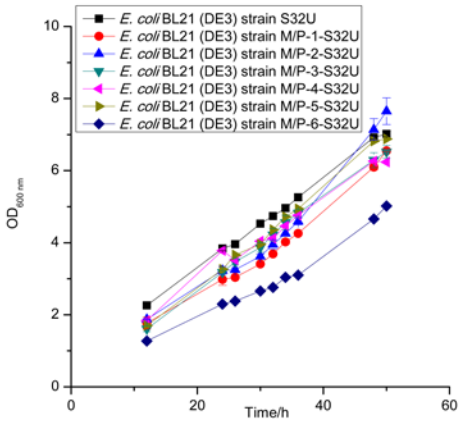

Figure S2 Growth profiles of the overexpression strains *E. coli* BL21 (DE3) M/P-(1-6) -S32U. The

detail information of these strains see Table 1. Data are presented as mean±SD (n=3).

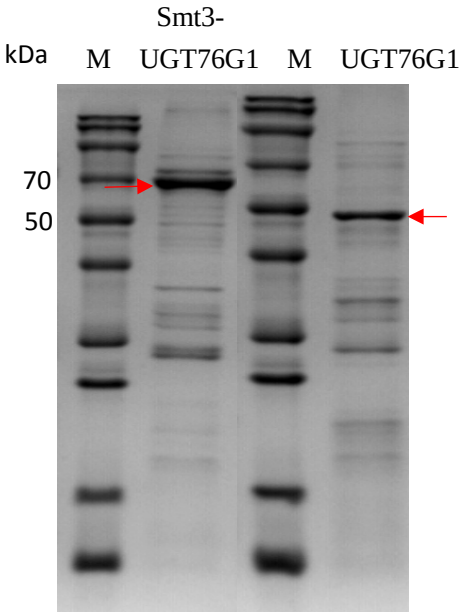

Figure S3 SDS-PAGE of the fusion enzyme Smt3-UGT76G1 and its tag deleted enzyme UGT76G1 by enterokinase hydrolysis