Supplementary material

Engineering budding yeast for the *de novo* synthesis of valuable flavanone derivatives

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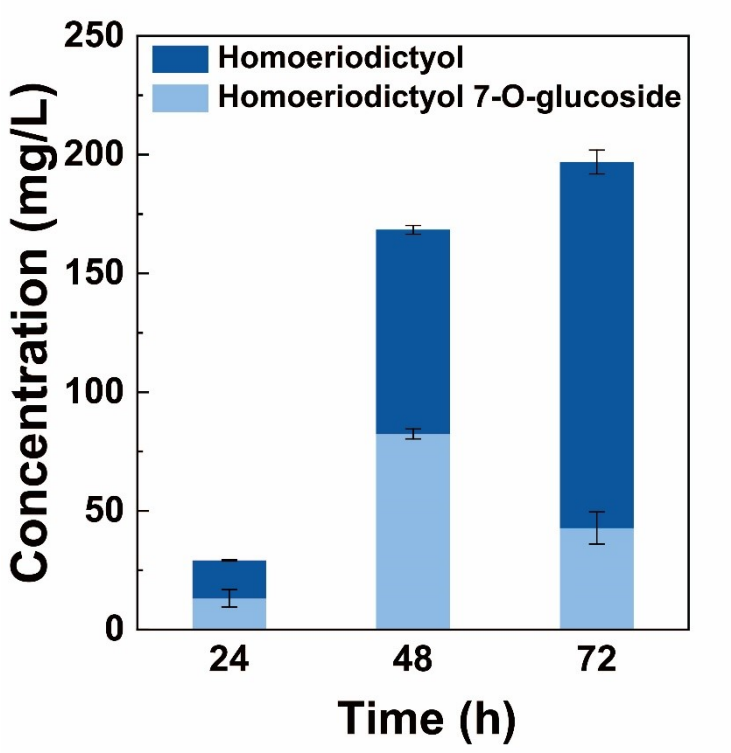

Figure S1 The production of homoeriodictyol 7-O-glucoside and homoeriodictyol by strain YTP008 expressing UGT73C6.

Table S1 List of plasmids constructed in this study

Strains	Description
pRS101	pRS413-P_{TEF1}-*DicGT4*-T_{ADH1}
pRS102	pRS413-P_{TEF1}-*AtGT2*-T_{ADH1}
pRS103	pRS413-P_{TEF1}-*NtGT2*-T_{ADH1}
pRS104	pRS413-P_{TEF1}-*UGT73C6*-T_{ADH1}
pRS105	pRS413-P_{TEF1}-*UGT73B2*-T_{ADH1}

Table S2 List of strains constructed in this study

Strains	Description
Yeri001	CEN.PK2-1D, *YPRCdelta15*::P_{TPI1}-*Pc4CL*-T_{CPS1}-P_{GPM1}-*MsCHI*-T_{TEF2}-P_{TEF1}-*PhCHS*-T_{ADH1}, ΔP_{ACC1}::P_{TEF1}, Δ*CIT2*, Δ*FDC1*, Δ*TSC13*:: *MdECR*, *Ty3*::P_{TEF1}-*MsCHI-(GGGGS)1-PhCHS*-T_{ADH1}, *YORWdelta22*::P_{GPM1}-*ATR1*-T_{TEF2}-P_{TEF1}-*AtF3'H*-T_{ADH1}
YTAL001	Yeri001, *PDC5*:: P_{TEF1}-*FjTAL*-T_{ADH1}
YTP001	YTAL001, *TT*::P_{TEF1}-*AtPAL2*-T_{ADH1}-P_{GPM1}-*AtC4H*-T_{TEF2}- P_{TPI1}-*ATR1*-T_{CPS1}-P_{TDH3}-*CYB5*-T_{PGK1}
YTP002	YTP001, *YHRCdelta14*::P_{TEF1}-*ARO4*^{K229L}-T_{ADH1}- P_{GPM1}-*ARO7*^{G141S}-T_{TEF2}
YTP003	YTP002, *YORWdelta17*::P_{TEF1}-*EcaroL*-T_{ADH1}
YTP004	YTP002, *YORWdelta17*::P_{TEF1}-*EcaroL*-T_{ADH1}-P_{GPM1}-*MtPDH1*-T_{TEF2}
YTP005	YTP004, *ARO10*::P_{TEF1}-*SeACS*^{L641S}-T_{ADH1}
YTP006	YTP004, *ARO10*::P_{TEF1}-*SeACS*^{L641S}-T_{ADH1}-P_{GPM1}-*ACC1*$^{S659A/S1157A}$-T_{TEF2}
YTP007	YTP004, *ARO10*::P_{TPI1}-*ROMT-9*^{mut}-T_{CPS1}
YTP008	YTP007, *YNRCdelta9*:: P_{TPI1}-*MET6*-T_{CPS1}-P_{GPM1}-*SAH1*-T_{TEF2}-P_{TEF1}-*ADO1*-T_{ADH1}- P_{TDH3}-*MET13-MTHFR*-T_{CYC1}
YTP009	YTP008, pRS101
YTP010	YTP008, pRS102
YTP011	YTP008, pRS103
YTP012	YTP008, pRS104
YTP013	YTP008, pRS105
YHG001	YTP008, *YERCdelta8*::P_{TEF1}-*UGT73C6*-T_{ADH1}
YHG002	YHG001, ΔGTB1
YHG003	YHG001, ΔEGH1
YHG004	YHG001, ΔSPR1
YHG005	YHG001, ΔEXG1
YHG006	YHG005, *HO*::P_{TPI1}-*Pc4CL*-T_{CPS1}- P_{TEF1}-*ROMT-9*^{mut}-T_{ADH1}
YHG007	YHG006, *YMRWdelta15*::P_{TEF1}-*ZWF1*-T_{ADH1}
YHG008	YHG006, *YMRWdelta15*::P_{TEF1}-*TYR1*-T_{ADH1}
YHG009	YHG006, *YMRWdelta15*::P_{TEF1}-*BDH1*^{mut}-T_{ADH1}
YHG010	YHG006, *YMRWdelta15*::P_{TEF1}-*ALD6*-T_{ADH1}
YHG011	YHG006, *YMRWdelta15*::P_{TEF1}-*Pos5Δ17*-T_{ADH1}
YHG012	YHG006, *YMRWdelta15*::P_{TEF1}-*GND1*-T_{ADH1}
YHG013	YHG006, *YMRWdelta15*::P_{TEF1}-*GND1*-T_{ADH1}- P_{GPM1}-*Pos5Δ17*-T_{TEF2}
YHG014	YHG013, *YARCdelta8*::P_{TEF1}-*PGM1*-T_{ADH1}
YHG015	YHG013, *YARCdelta8*::P_{TEF1}-*URA6*-T_{ADH1}
YHG016	YHG013, *YARCdelta8*::P_{TEF1}-*YNK1*-T_{ADH1}
YHG017	YHG013, *YARCdelta8*::P_{TEF1}-*UGP1*-T_{ADH1}
YHG018	YHG013, *YARCdelta8*::P_{TEF1}-*YMD8*-T_{ADH1}
YHG019	YHG013, ΔHUT1
YHG020	YHG013, ΔYEA4

YHG021	YHG013, ΔHUT1, *YARCdelta8::P_{TEF1}-PGM1-T_{ADH1}-P_{TPI1}-UGP1-T_{CPS1}*
YHG022	YHG021, *YCRWdelta12::P_{TEF1}-SIR2-T_{ADH1}*
YHG023	YHG021, *YCRWdelta12::P_{TEF1}-MSN2-T_{ADH1}*
YHG024	YHG021, *YCRWdelta12::P_{TEF1}-MSN4-T_{ADH1}*
YHG025	YHG021, *YCRWdelta12::P_{TEF1}-RIM15-T_{ADH1}*
YHG026	YHG021, *YCRWdelta12::P_{TEF1}-VHb-T_{ADH1}*

Table S3 Comparison of different approaches in green chemistry and sustainability.

Methods	Raw material	Price of raw material (USD/ton)	Yield (mg/g)	*E*-Factor*	%PE EAE*	Reference
Chemical synthesis	Phloroglucinol	5300	5.10	20676	0.51%	1
Plant extraction	*Viscum album* L.	n.d.	0.01	130102	n.d.	2
Microbial synthesis	Glucose	240	13.1	1667	1.31%	This study

* All data were evaluated according to the 12 principles of Green Chemistry.[3]

References

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