

Supplementary Material

Recombinant yeast for production of the pain receptor modulator nonivamide from vanillin

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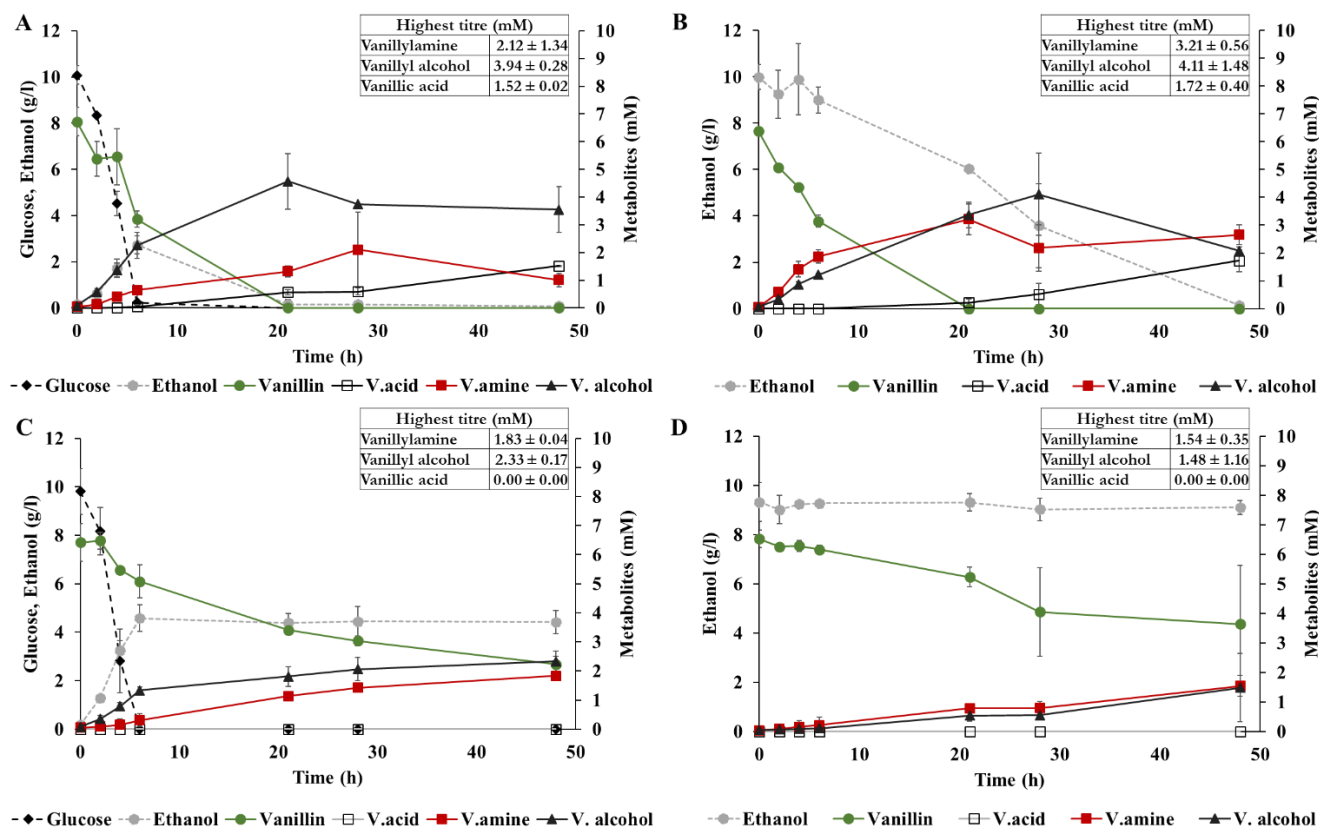
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1 Supplementary Tables

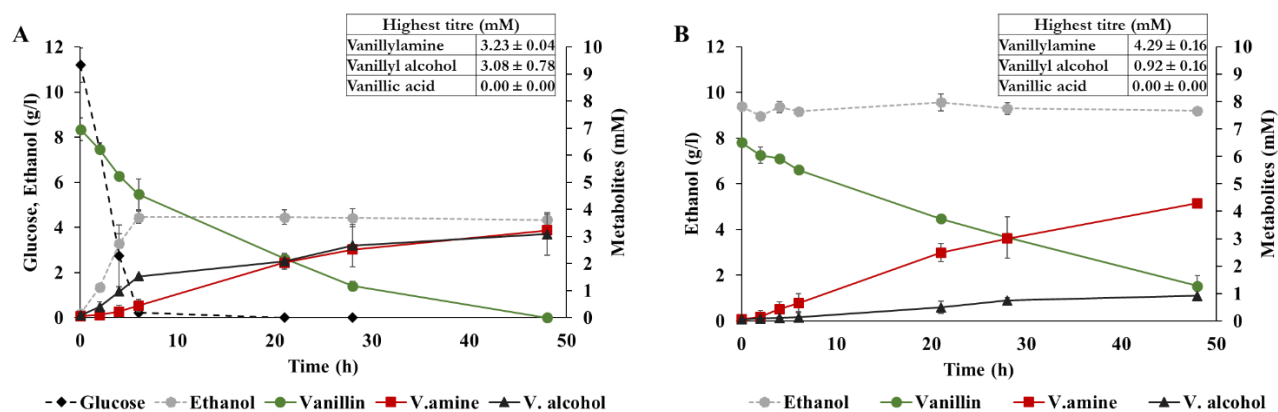
Supplementary Table S1. List of primers and primer sequences.

Primer name	Primer sequence 5'-3'
AlaDH_XhoI	TAAGCACTCGAGGCAGAGGAGGAAAAACCCATGA
AlaDH_SfaAI	TAAGCAGCGATCGCTACTAGTTCAAGCACCAGCAACAG
CvATA_TDH3p_SdaI	TAAGCACCTGCAGGGCGCGCCAGTTTATCATTATC
CvATA_ADH1t_SfaAI	TAAGCAGCGATCGCGTGGAAGAACGATTACAACAG
TEF1p_BcuI	TAAGCACTAGTATAGCTTCAAAATGTTTCTACTCC
TEF1P_SfaAI	TAACGAGCGATCGCTTGTAATTAAAACTTAGATTAGATTGC
ScPGK1t_GPDp_FW	ATTGAATTGAATTGAAATCGATAGATC
ScPGK1t_GPDp_RV	TTTGTTTGTTTATGTGTGTTTATTTCG
X-3_DS_FW	TGAGGTGGTTATTGATCACCGG
XII-5_TEF1p_REV	TTTGTAATTAAAACTTAGATTAGATTGCTATGC
X-3_UP	CGAGATCTTTGTGTTCGGTTAC
ADH1t	ACACTTCTAAATAAGCGAATTTCTTATG
Aur1p_ADH6_homology	CACATTTCGAGGAAGAAATTCAACACAACAACAAGAAAAGCCAAA ATCGAGAAAGTGCCCATCAGTGT
Aur1t_ADH6_homology	GGAGCAGTTAAAAAGAAAGGAGCTACATTTATCAAGAGCTTGACA CCAGAGGAAAGAATAACGCA

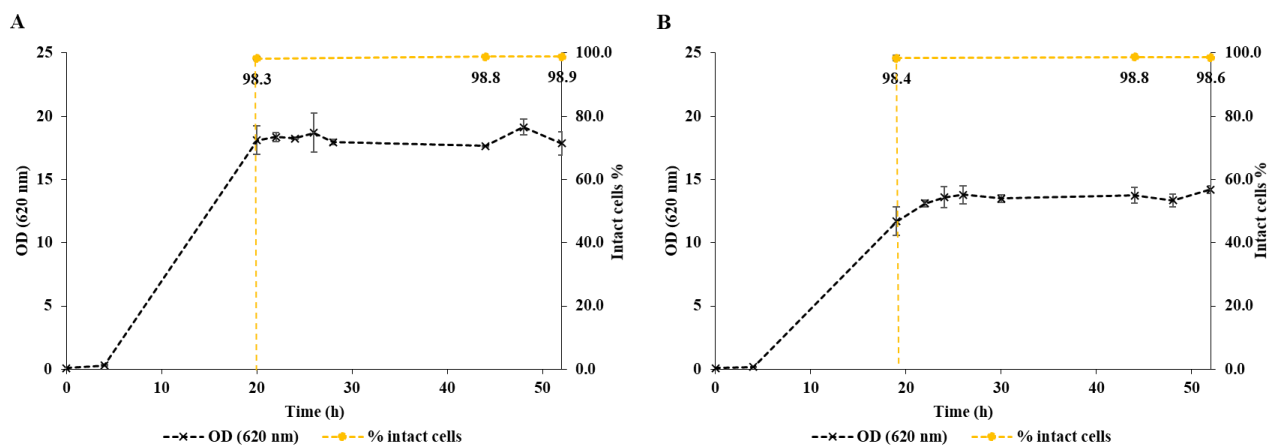
2 Supplementary Figures



Supplementary Figure S1. Whole-cell reductive amination of vanillin to vanillylamine in flasks (aerobic) or sealed serum vials (anaerobic) and various conditions using yeast strain TMB4375 overexpressing Cv-ATA in (A) glucose, aerobic, (B) ethanol, aerobic, (C) glucose, anaerobic, (D) ethanol, anaerobic. Vanillin consumption rate was (A) 0.08 ± 0.00 , (B) 0.11 ± 0.00 , (C) 0.04 ± 0.01 and (D) 0.02 ± 0.01 , calculated for the initial 6 hours as milimoles of vanillin consumed per cell concentration in OD and time ($\text{mmol OD}^{-1} \text{h}^{-1}$).



Supplementary Figure S2. Anaerobic whole-cell reductive amination of vanillin to vanillylamine in flasks with co-substrate (A) glucose or (B) ethanol, using yeast strain TMBNM032 overexpressing Cv-ATA and Bs-AlaDH. Vanillin consumption rate was (A) 0.07 ± 0.01 and (B) 0.04 ± 0.01 , calculated for the initial 6 hours as milimoles of vanillin consumed per cell concentration in OD and time ($\text{mmol OD}^{-1} \text{h}^{-1}$).



Supplementary Figure S3. Optical density and percentage of intact cells from whole-cell bioreactor bioconversions by TMBNM034 in (A) 0.5 vvm aerated and (B) no aerated condition.