

Table S1 Concentration of residual maltose in maltose LSMLD medium (g/L)

Strains	Fermentation time (min)								
	0	30	60	90	120	150	180	240	
BY14 α	37.83 \pm 0.89	36.50 \pm 0.78	32.33 \pm 0.66	28.60 \pm 0.62	25.34 \pm 0.45	20.05 \pm 0.40	13.93 \pm 0.38	6.19 \pm 0.26	
BYK	37.86 \pm 0.90	36.53 \pm 0.67	32.53 \pm 0.54	29.02 \pm 0.58	25.12 \pm 0.50	19.87 \pm 0.44	13.76 \pm 0.25	6.17 \pm 0.21	
B+T	38.02 \pm 0.78	36.28 \pm 0.72	32.05 \pm 0.60	28.34 \pm 0.51	23.92 \pm 0.44	19.37 \pm 0.35	12.47 \pm 0.30	5.68 \pm 0.12 ^a	
B+T _C	38.00 \pm 0.89	36.34 \pm 0.78	32.14 \pm 0.64	28.46 \pm 0.60	25.26 \pm 0.48	19.47 \pm 0.41	11.76 \pm 0.30	5.71 \pm 0.16 ^a	
B+T _B	37.68 \pm 0.74	36.67 \pm 0.70	32.45 \pm 0.65	28.12 \pm 0.55	25.10 \pm 0.50	19.86 \pm 0.44	13.69 \pm 0.32	6.03 \pm 0.26	
B+T _A	38.12 \pm 0.65	36.30 \pm 0.61	32.78 \pm 0.60	28.83 \pm 0.60	25.06 \pm 0.51	20.00 \pm 0.50	13.40 \pm 0.44	5.97 \pm 0.15	
B+T _D	37.91 \pm 0.78	35.51 \pm 0.70	33.60 \pm 0.62	28.86 \pm 0.60	24.99 \pm 0.55	20.72 \pm 0.46	12.84 \pm 0.40	6.18 \pm 0.20	
B+T _E	38.10 \pm 0.80	36.63 \pm 0.74	34.17 \pm 0.68	28.83 \pm 0.64	24.45 \pm 0.58	20.19 \pm 0.50	14.44 \pm 0.50	7.34 \pm 0.30 ^a	
B-TUP1	38.00 \pm 0.92	36.69 \pm 0.77	32.91 \pm 0.64	27.95 \pm 0.58	26.00 \pm 0.54	20.83 \pm 0.42	15.73 \pm 0.40	6.88 \pm 0.22 ^a	
B-T+K	38.02 \pm 0.88	36.58 \pm 0.72	32.65 \pm 0.60	28.24 \pm 0.60	25.92 \pm 0.44	20.37 \pm 0.35	15.47 \pm 0.30	6.78 \pm 0.18 ^a	
B-T+T _C	38.10 \pm 0.89	35.77 \pm 0.75	32.07 \pm 0.60	27.04 \pm 0.57	22.62 \pm 0.40	18.31 \pm 0.41	12.91 \pm 0.27	5.71 \pm 0.16 ^{ab}	
B-T+T _B	38.20 \pm 0.90	35.63 \pm 0.70	31.87 \pm 0.65	26.58 \pm 0.53	23.34 \pm 0.50	19.49 \pm 0.41	12.84 \pm 0.22	5.64 \pm 0.19 ^{ab}	
B-T+T _A	37.69 \pm 0.71	35.19 \pm 0.63	31.29 \pm 0.63	27.08 \pm 0.60	23.55 \pm 0.55	19.21 \pm 0.51	12.53 \pm 0.32	5.46 \pm 0.15 ^{ab}	
B-T+T _D	38.15 \pm 0.78	35.54 \pm 0.72	33.17 \pm 0.62	28.33 \pm 0.60	24.65 \pm 0.48	19.69 \pm 0.45	14.47 \pm 0.36	6.44 \pm 0.21 ^b	
B-T+T _E	37.90 \pm 0.80	35.66 \pm 0.74	32.71 \pm 0.70	28.79 \pm 0.65	24.74 \pm 0.55	20.88 \pm 0.50	14.38 \pm 0.40	6.33 \pm 0.20 ^b	

Values shown represent averages of at least three independent experiments (data are means \pm SD).

^a Values of the mutants are significantly (Student's *t* test, $P < 0.05$, $n=3$) different from that of the parental strain BY14 α .

^b Values of the mutants are significantly (Student's *t* test, $P < 0.05$, $n=3$) different from that of the mutant B-TUP1.