Supplementary Material 4: Supplemental Tables

Table S1: *C. jadinii* and *S. cerevisiae* in glucose- and ethanol-limited growth at 0.10 h^{-1} (mean ± SD)

Strain	Substrate	$Y_{X/S}$ ($g_{biomass} \cdot g_s^{-1}$)	$q_{ethanol}$ ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{CO_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{O_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	RQ
S. cerevisiae	Glucose	0.48 ± 0.00	1.27 ± 0.00	3.31 ± 0.25	2.78 ± 0.13	1.19 ± 0.03
S. cerevisiae	Ethanol	0.59 ± 0.01	3.64 ± 0.20	3.56 ± 0.10	6.62 ± 0.17	0.54 ± 0.00
C. jadinii	Glucose	0.51 ± 0.01	1.08 ± 0.01	2.99 ± 0.08	2.51 ± 0.12	1.19 ± 0.03
C. jadinii	Ethanol	0.74 ± 0.01	2.87 ± 0.02	2.19 ± 0.02	4.41 ± 0.05	0.50 ± 0.00

Table S2: Amino acid composition of the biomass of *C. jadinii* and *S. cerevisiae* in glucose- and ethanol-limited growth at 0.10 h^{-1} (mean ± SD). Values are in $mg \cdot g_{biomass}^{-1}$.

	S. cerevisiae		*C. jadinii*	
Amino acid	**Glucose**	**Ethanol**	**Glucose**	**Ethanol**
Alanine	17.7 ± 0.5	21.4 ± 0.3	25.0 ± 0.8	29.1 ± 0.4
Arginine	15.5 ± 0.4	19.5 ± 0.3	21.2 ± 0.6	24.9 ± 0.3
Aspartate/Asparagine	32.9 ± 0.8	37.8 ± 0.1	40.5 ± 1.3	44.7 ± 0.8
Glutamate/Glutamine	38.2 ± 0.9	60.5 ± 0.6	62.0 ± 2.8	65.7 ± 1.6
Glycine	13.8 ± 0.3	16.7 ± 0.0	19.6 ± 0.6	22.6 ± 0.1
Histidine	6.5 ± 0.2	8.1 ± 0.1	8.2 ± 0.3	10.0 ± 0.1
Isoleucine	15.8 ± 0.4	18.1 ± 0.1	20.4 ± 0.7	23.6 ± 0.1
Leucine	24.0 ± 0.6	27.8 ± 0.4	31.4 ± 1.0	35.5 ± 0.4
Lysine	25.8 ± 0.6	28.7 ± 0.3	31.9 ± 1.2	36.8 ± 0.4
Methionine	5.1 ± 0.1	5.9 ± 0.2	5.2 ± 0.2	5.9 ± 0.1
Phenylalanine	14.5 ± 0.4	16.4 ± 0.2	18.8 ± 0.6	21.0 ± 0.2
Proline	11.8 ± 0.3	13.8 ± 0.0	15.0 ± 0.4	17.1 ± 0.4
Serine	15.7 ± 0.4	17.9 ± 0.4	22.2 ± 1.0	24.6 ± 0.4
Threonine	16.0 ± 0.4	18.2 ± 0.2	21.7 ± 0.8	23.9 ± 0.4
Tyrosine	11.0 ± 0.3	12.7 ± 0.1	14.9 ± 0.2	17.2 ± 0.3
Valine	17.5 ± 0.5	19.6 ± 0.3	23.9 ± 0.8	27.8 ± 0.2

Table S3: effect of growth rate on ethanol-limited CBS 621 physiology

Dilution rate (h^{-1})	$Y_{X/S}$ ($g_{biomass} \cdot g_{ethanol}^{-1}$)	$q_{ethanol}$ ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{CO_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{O_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	RQ
0.025 ± 0.00	0.59 ± 0.00	0.93 ± 0.02	0.98 ± 0.03	1.56 ± 0.00	0.63 ± 0.02
0.05 ± 0.00	0.70 ± 0.01	1.54 ± 0.00	1.39 ± 0.01	2.65 ± 0.11	0.52 ± 0.00
0.10 ± 0.00	0.74 ± 0.01	2.87 ± 0.02	2.19 ± 0.02	4.41 ± 0.05	0.50 ± 0.00
0.21 ± 0.00	0.77 ± 0.01	5.90 ± 0.01	3.63 ± 0.02	8.30 ± 0.02	0.44 ± 0.00
0.24 ± 0.00	0.78 ± 0.01	6.69 ± 0.01	3.86 ± 0.04	9.72 ± 0.25	0.40 ± 0.01
0.30 ± 0.00	0.81 ± 0.00	8.18 ± 0.08	4.78 ± 0.11	11.76 ± 0.07	0.41 ± 0.00

Table S4: Genome sequence of CBS 621 and CBS 5947

Components	NBRC 0988 (CBS 5609)	NBRC 0988 (CBS 5609)	CBS 621	CBS 5947
NCBI assembly reference	GCA_000328385.1 (2016)	GCA_024346625.1 (2022)		
Assembly level	Chromosomes	Chromosomes	-	-
Genome size	14.3 Mb	13.1 Mb	17.9 Mb	14.7 Mb
Genes	8,864	-	10,949	
No of scaffolds	1,002	7	-	-
Scaffolds N50	189,765	2,424,584	-	-
No of contigs	1,163	7	7,832	6,831
Contigs N50	158,681	2,424,584	3,994	3,299
No of chromosomes	13	6 (+ mtDNA)	-	-
GC-content	44.7	44.5	44.5	44.3
Total of CDS	8,646	-		

Table S5: Vitamin-dependent physiology of *C. jadinii* strains on ethanol-limited growth at 0.10 h^{-1}

Strain	Condition	$Y_{X/S}$ ($g_{biomass} \cdot g_{ethanol}^{-1}$)	$q_{ethanol}$ ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{CO_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	q_{O_2} ($mmol \cdot g_{biomass}^{-1} \cdot h^{-1}$)	RQ
CBS 621	Ctrl (all vit)	0.74 ± 0.01	2.90 ± 0.02	2.19 ± 0.02	4.40 ± 0.05	0.50 ± 0.00
CBS 1600	Ctrl (all vit)	0.73 ± 0.01	2.94 ± 0.05	2.19 ± 0.04	4.41 ± 0.12	0.50 ± 0.00
CBS 1600	Δ vitamins	0.72 ± 0.01	2.96 ± 0.00	2.25 ± 0.01	4.51 ± 0.01	0.50 ± 0.00
CBS 5609	Δ vitamins	0.70 ± 0.00	3.14 ± 0.16	2.42 ± 0.10	4.99 ± 0.23	0.48 ± 0.00
CBS 5947	Δ vitamins	0.74 ± 0.01	2.95 ± 0.03	2.23 ± 0.05	4.61 ± 0.09	0.48 ± 0.00

Table S6: Vitamin levels in C. jadinii CBS 5947 at the end of fed-batch and their requirements in aquaculture (DOI: 10.17226/13039)

Vitamin	Content* ($mg \cdot (kg_{biomass})^{-1}$)	Aquaculture# ($mg \cdot (kg_{diet})^{-1}$)
Thiamine	1.7 ± 0.3	5 ± 2
Riboflavin	15 ± 3	7 ± 1
Niacin	290 ± 140	30 ± 15
Pyridoxine	53 ± 9	7 ± 1

*mean ± SD, #mean ± SEM