SUPPLEMENTAL MATERIAL

Fermentation of dairy-relevant sugars by *Saccharomyces*, *Kluyveromyces*, and *Brettanomyces*: an exploratory study with implications for the utilization of acid whey
Part I

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Table S1. Prediction models for density curves of anaerobic fermentations by different yeasts, in non-selective medium supplemented with sugars commonly found in acid whey. Root mean square error (RMSE) and R-square are shown as estimations of the accuracy of each model fitted.

Fitted Model	Species	Equation	Parameters	RMSE	R-Square
Logistic 4P	*Brettanomyces claussenii*	$Density = a + \dfrac{(b - a)}{1 + e^{-c(Time-d)}}$	a = Lower Asymptote b = Upper Asymptote c = Growth Rate d = Inflection Point	0.00075	0.98449
Exponential 3P	*Kluyveromyces marxianus*	$Density = a + b \times e^{c(Time)}$	a = Asymptote b = Scale c = Growth Rate	0.00113	0.96746
Exponential 3P	*Saccharomyces cerevisiae*	$Density = a + b \times e^{c(Time)}$	a = Asymptote b = Scale c = Growth Rate	0.00233	0.89188

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Table S2. Estimated parameters of fitted models for density curves of anaerobic fermentations by different yeasts. Values in parentheses correspond to the standard errors of said parameters. Each estimate resulted in a significant value (P<0.0001), according to the Wald test.

| Species	Carbon Source	a (g/mL)	b (g/mL)	c (g/mLday)	d (day)
B. claussenii	Lactose	0.994 (0.003)	1.021 (0.002)	-0.166 (0.037)	9.483 (0.683)
	Glucose + Galactose	1.008 (0)	1.016 (0)	-2.816 (0.602)	2.242 (0.088)
	Glucose	0.999 (0)	1.016 (0)	-1.32 (0.112)	3.106 (0.077)
	Galactose	0.999 (0.001)	1.017 (0)	-0.331 (0.031)	9.459 (0.236)
K. marxianus	Lactose	0.999 (0)	0.017 (0.001)	-1.055 (0.11)	-
	Glucose + Galactose	0.999 (0)	0.017 (0.001)	-0.69 (0.072)	-
	Glucose	0.999 (0)	0.017 (0.001)	-0.932 (0.095)	-
	Galactose	0.998 (0)	0.019 (0.001)	-0.598 (0.059)	-
S. cerevisiae	Glucose + Galactose	0.998 (0.002)	0.02 (0.002)	-0.407 (0.1)	-
	Glucose	0.999 (0.001)	0.018 (0.001)	-0.755 (0.151)	-
	Galactose	0.996 (0.002)	0.022 (0.002)	-0.337 (0.086)	-

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Figure S1. Model plots for density curves of anaerobic fermentations by different yeasts, in non-selective medium supplemented with sugars commonly found in acid whey. *Saccharomyces cerevisiae* in lactose was excluded from the analysis, as no density decrease was observed in this substrate.
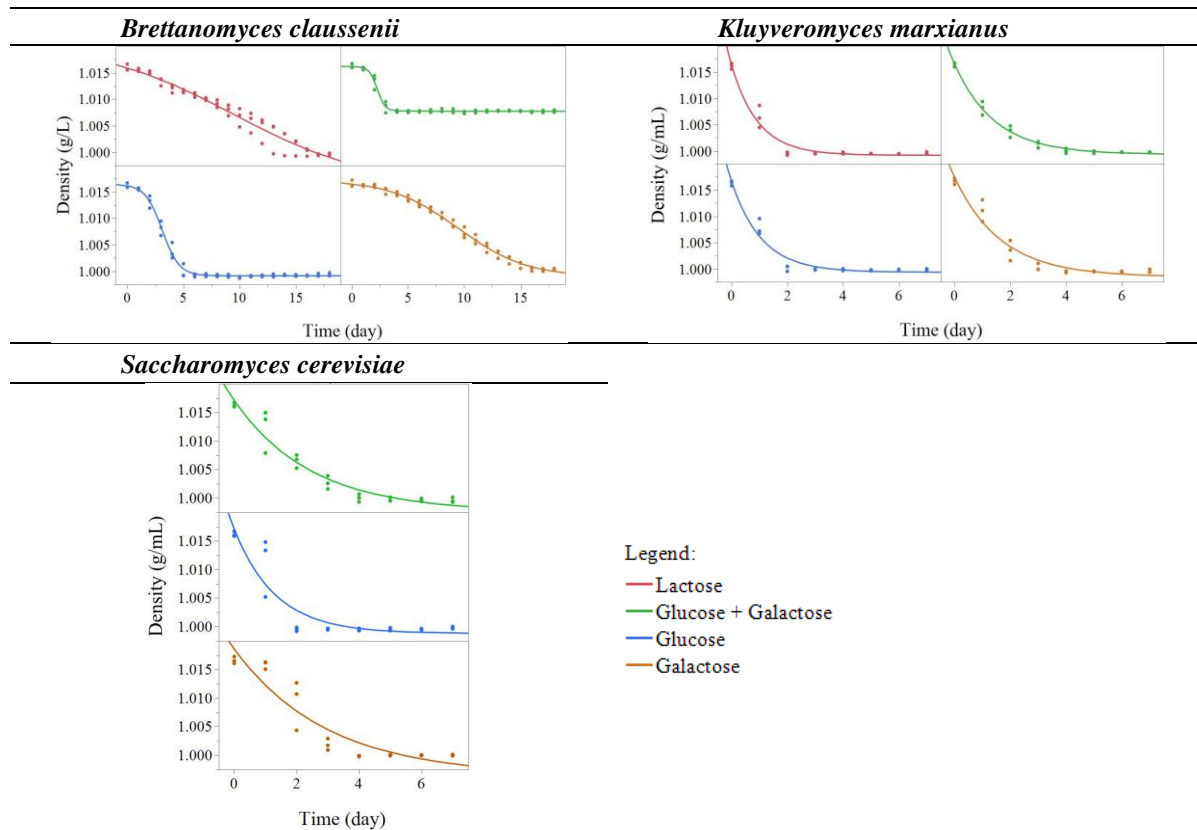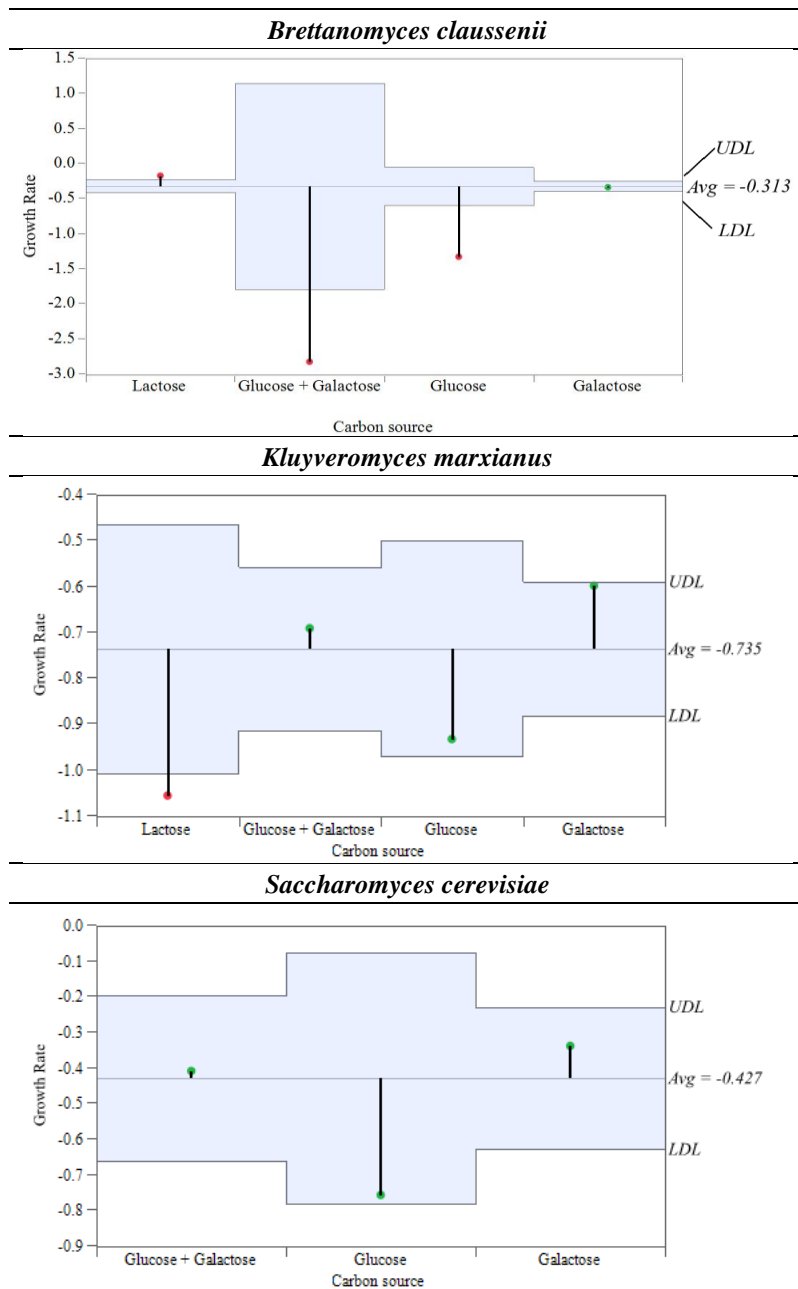
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Figure S2. Analysis of Mean (ANOM) of growth rate parameters obtained per carbon source for each yeast species. Results shown in red fall outside of the upper or lower decision limits (UDL or LDL) as compared to the mean value for all carbon sources when fermented by the displayed species ($\alpha=0.05$). *Saccharomyces cerevisiae* in lactose was excluded from the analysis, as no density decrease was observed in this substrate.

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Table S3. Estimated maximum achievable ethanol yields in each treatment (in % v/v), as calculated using Equation 1.

Species	Lactose	Glucose + Galactose	Glucose	Galactose
B. claussenii	2.23	2.46	2.40	2.27
K. marxianus	2.25	2.42	2.46	2.26
S. cerevisiae	2.23	2.40	2.42	2.30