SUPPLEMENTAL MATERIAL
Leveraging milk permeate fermentation to produce lactose-free, low-in-glucose, galactose-rich bioproducts: optimizations and applications

Table S1. Design table for the optimization of galactose retention, residual glucose, and ethanol production by *B. claussenii* OYL-201 in 15%TS milk permeate, using response surface methodology.

Run	Temperature (°C)	Inoculation level (log cfu/mL)	Time (day)
1	25	7.75	22
2	35	8.50	40
3	30	7.75	40
4	35	7.00	40
5	35	7.00	40
6	35	7.00	4
7	30	7.00	22
8	30	7.75	40
9	35	8.50	4
10	30	7.75	22
11	25	7.00	40
12	35	8.50	4
13	30	8.50	22
14	30	7.75	4
15	25	8.50	4
16	30	7.75	4
17	30	7.75	22
18	30	7.00	22
19	35	8.50	40
20	35	7.75	22
21	25	8.50	4
22	35	7.00	4
23	35	7.00	40
24	30	8.50	22
25	30	7.75	40
26	35	7.75	22
27	35	7.75	22
28	30	7.75	22

Table S1 (continuation). Design table for the optimization of galactose retention, residual glucose, and ethanol production by *B. claussenii* OYL-201 in 15%ts milk permeate, using response surface methodology.

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Run	Temperature (°C)	Inoculation level (log cfu/mL)	Time (day)
29	25	7.00	40
30	30	7.75	22
31	25	8.50	40
32	35	7.00	4
33	25	7.75	22
34	25	8.50	40
35	30	8.50	22
36	35	8.50	4
37	25	7.75	22
38	25	7.00	40
39	25	7.00	4
40	30	7.75	22
41	30	7.00	22
42	35	8.50	40
43	25	7.00	4
44	25	7.00	4
45	25	8.50	4
46	25	8.50	40
47	30	7.75	4
48	30	7.75	22
49	30	7.75	13
50	30	7.75	13
51	30	7.75	13
52	30	7.75	13
53	30	7.75	31
54	30	7.75	31
55	30	7.75	31
56	30	7.75	31

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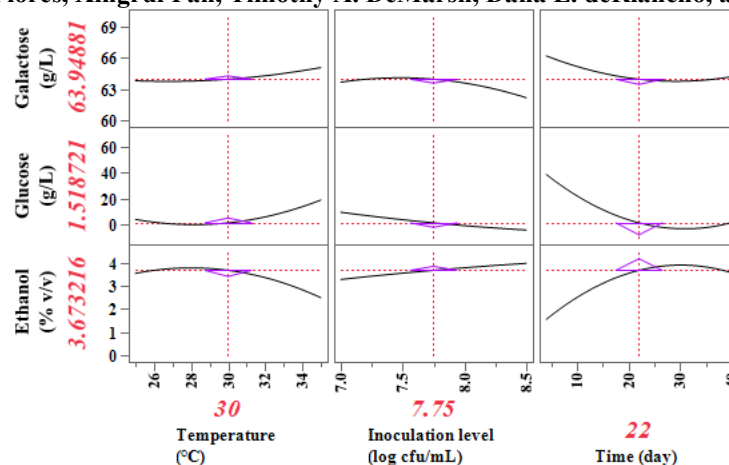

Figure S1. Individual effects of each fermentation parameter on the final concentrations of galactose, glucose, and ethanol. Each trend corresponds to the effect of a given factor when the other two are set at their respective center points. The triangles indicate the relative size and direction of the effects. An interactive profiler showing all effects alongside the testing range can be found at: https://hdl.handle.net/1813/113351.

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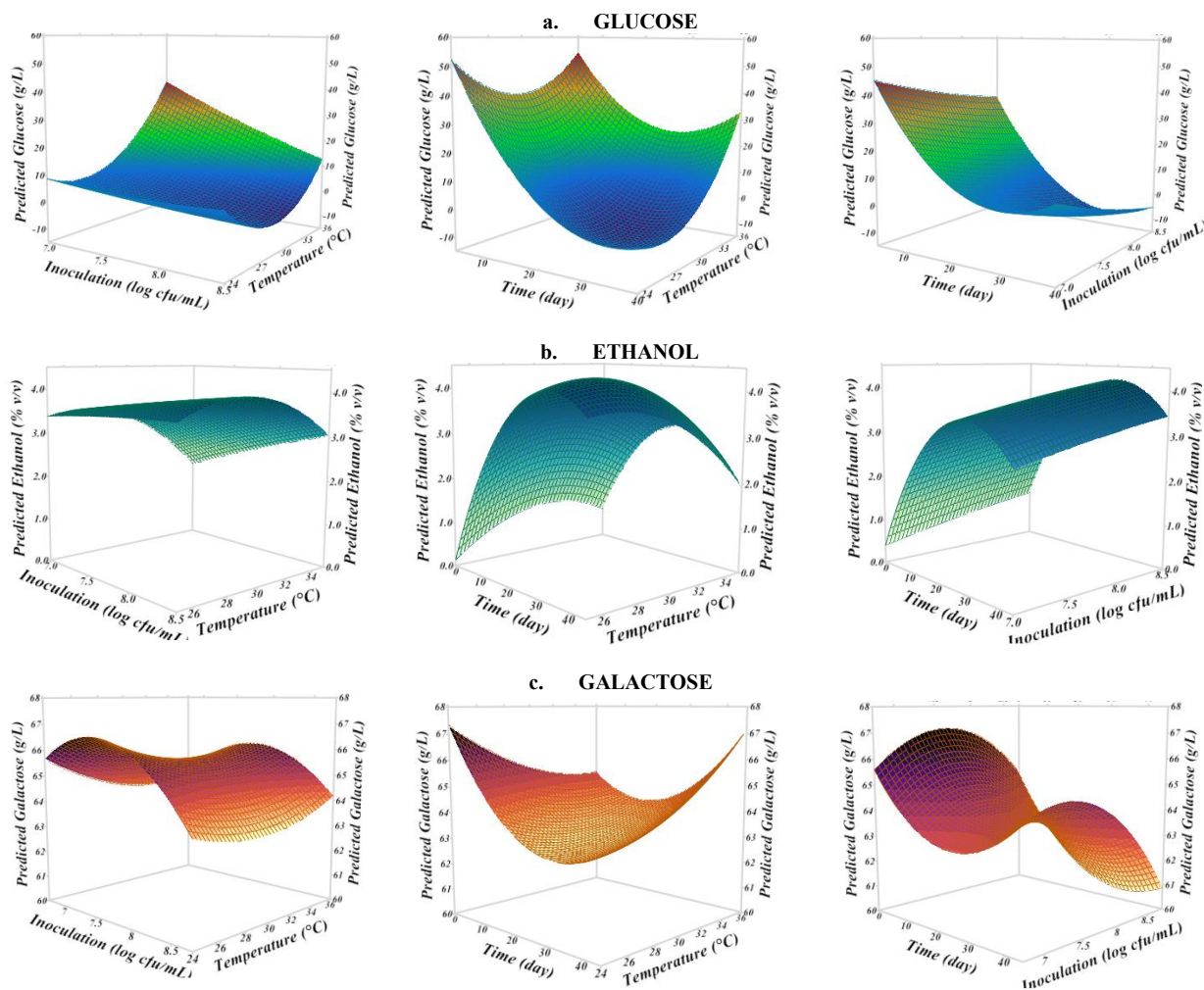
Figure S2. Response surfaces representing the predicted values for: (**a**) glucose; (**b**) ethanol; (**c**) galactose for all possible 2-way factor interactions. The factor not included in each graph is set to its center point. That is, 22 days, 7.75 log cfu/mL, and 30°C, for time, inoculation level, and temperature, respectively.
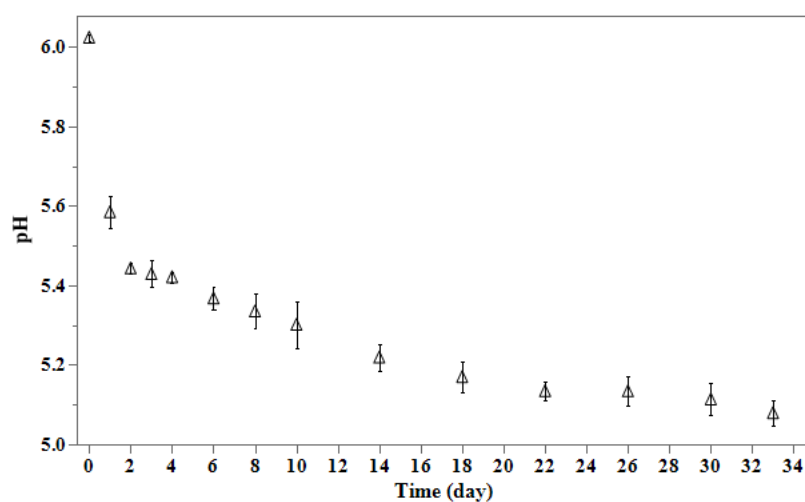
Figure S3. pH profile of the anaerobic fermentation of 15%TS milk permeate with *B. claussenii* OYL-201. The process was carried out using the parameters recommended for a combined optimization of galactose, glucose, and ethanol (Table 9). Data are presented as means ± standard deviations of 3 biological replicates.