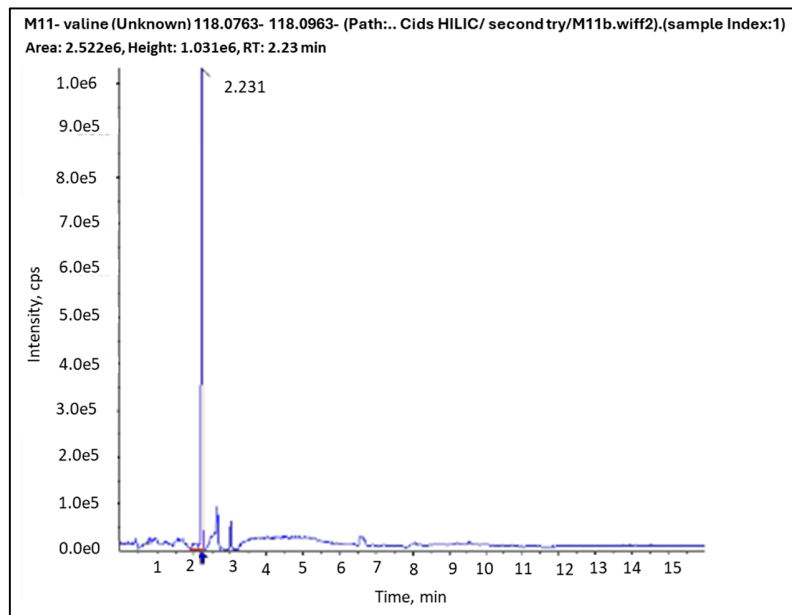


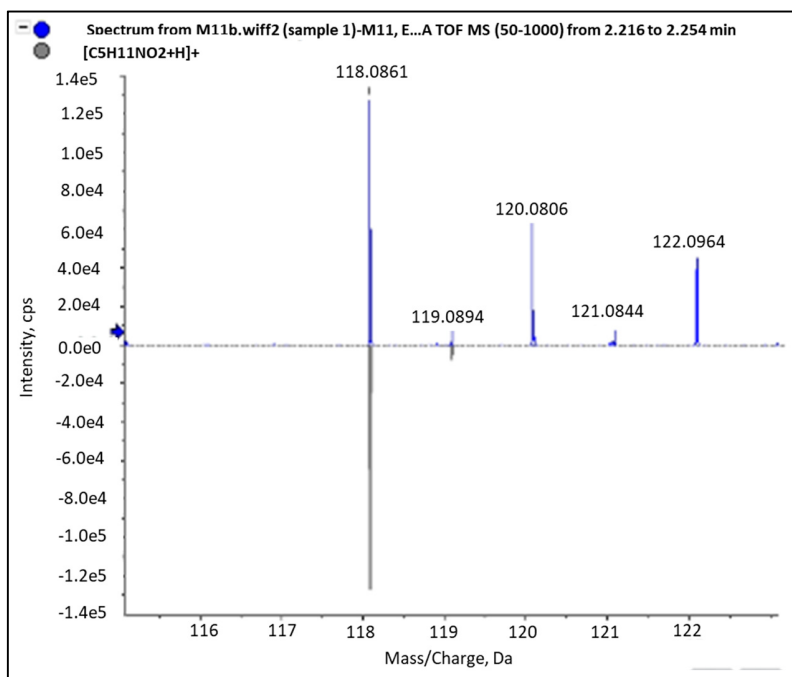
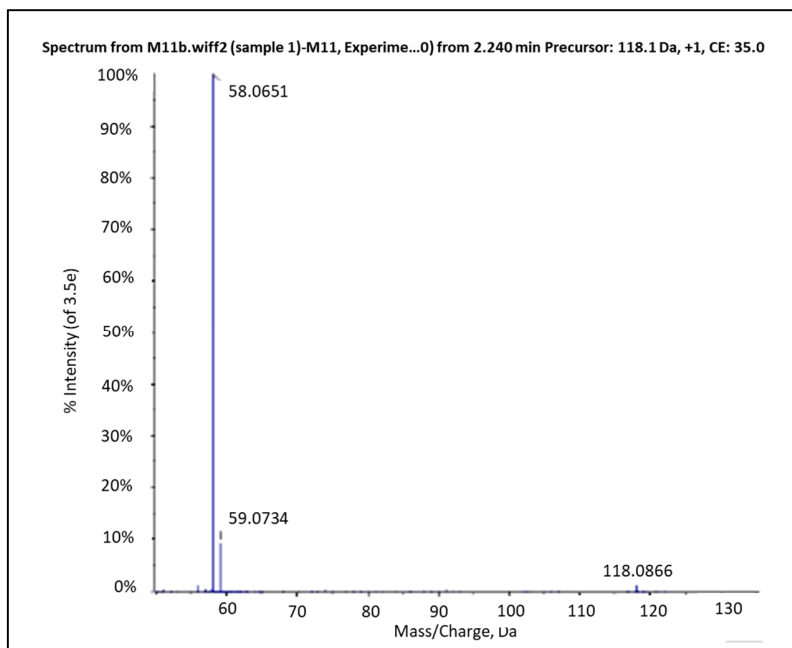
Supplementary

Table S1. Kinetic data of *Kluyveromyces marxianus* strain EXF-5288 cultivated in initial lactose concentration of 35.0 ± 2.0 g/L at $T = 20.0^\circ\text{C}$.

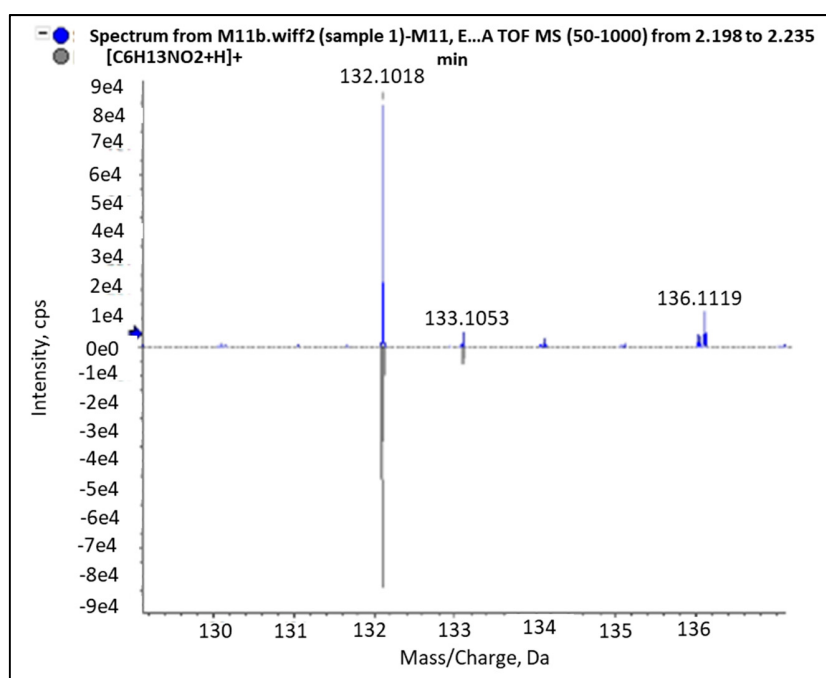
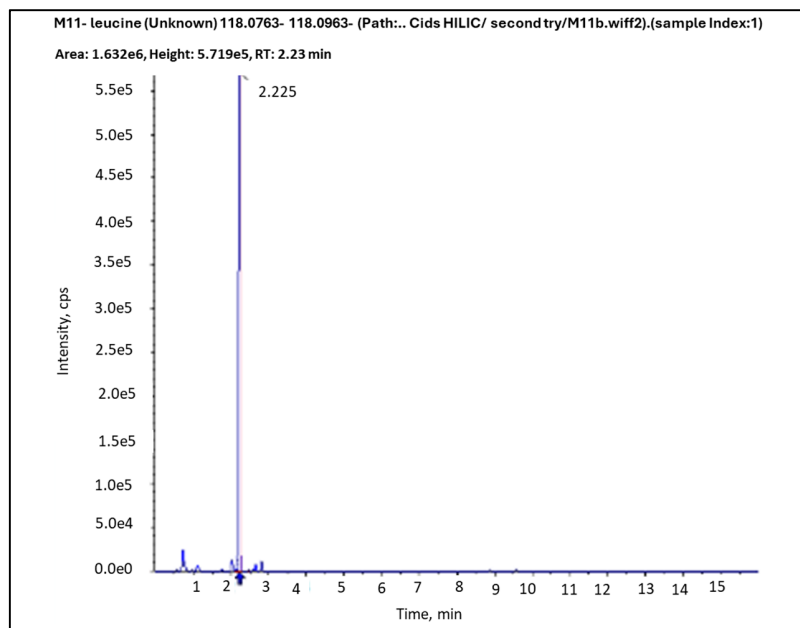
Culture configuration	Hours	Biomass, X (g/L)	SCP (g/L)	La _{cons} (g/L)	Ethanol (g/L)	Citric acid (g/L)	Y _{X/Laccons} (g/g)	Y _{SCP/X} (g/g)	Y _{Eth/Laccons} (g/g)	Y _{Cit/Laccons} (g/g)
35.0±2.0g/L Shake flasks	24 ^c	5.38± 0.43	2.00± 0.03	27.7± 0.8	2.8± 0.1	0.6± 0.2	0.19± 0.01	0.37± 0.02	0.10± 0.00	0.02± 0.00
	97 ^a	9.69± 1.58	3.25± 0.40	34.6± 1.6	0.00	5.2± 0.3	0.28± 0.03	0.34± 0.00	0.00	0.15± 0.00
	120 ^b	9.45± 1.70	3.66± 0.33	34.6± 1.6	0.00	5.3± 0.3	0.27± 0.03	0.39± 0.03	0.00	0.15± 0.00
	144 ^d	8.16± 0.00	3.28± 0.00	34.6± 0.1	0.00	5.6± 0.0	0.24± 0.00	0.40± 0.00	0.00	0.16± 0.00

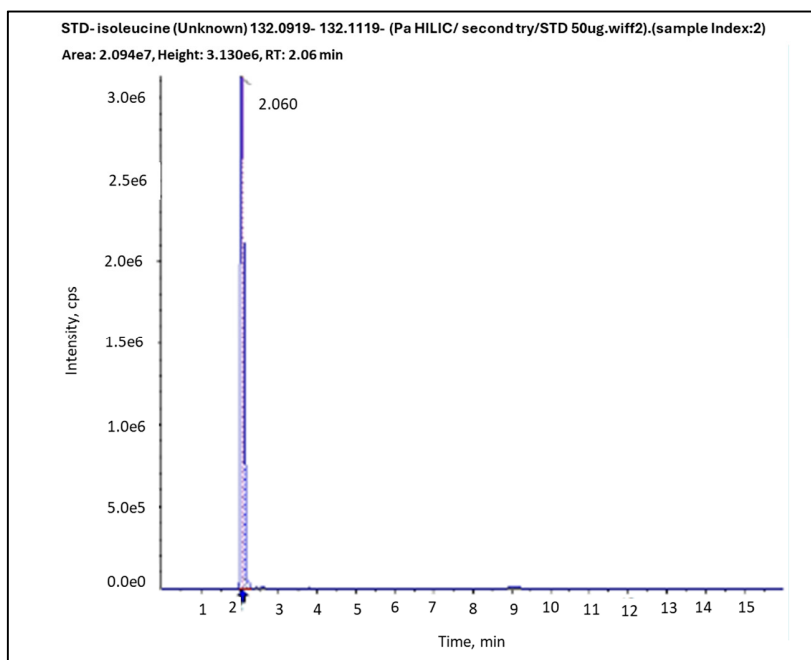
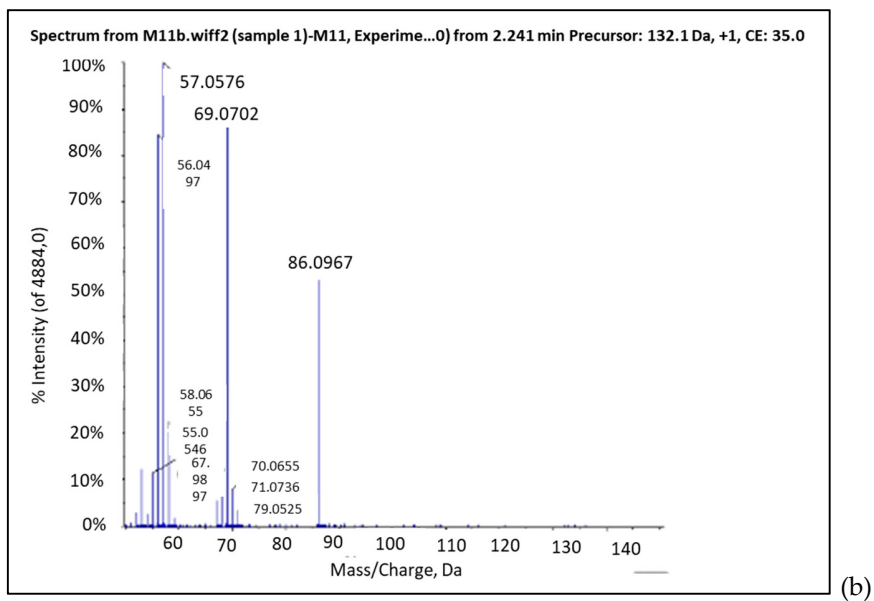
a=max Biomass, b=max SCP, c= max Ethanol, d= max Citric acid. Culture conditions: growth on aseptic 250 mL flasks at 180 ± 5 rpm, pH= 3.5.

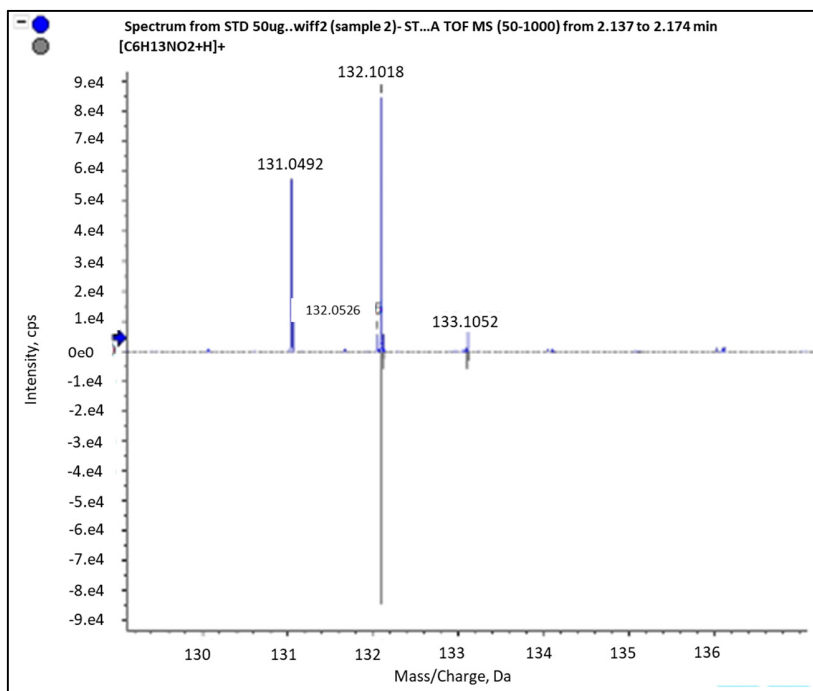
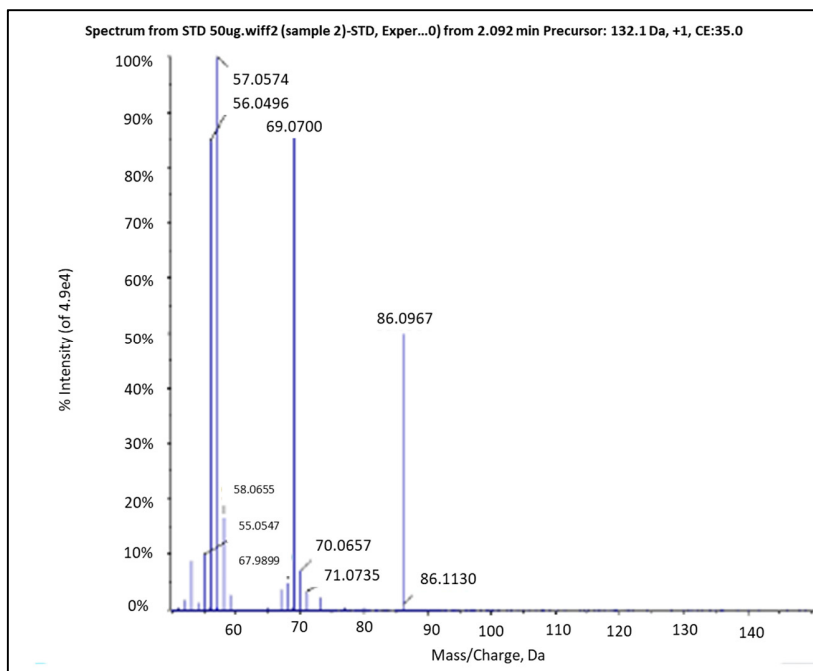




(a)



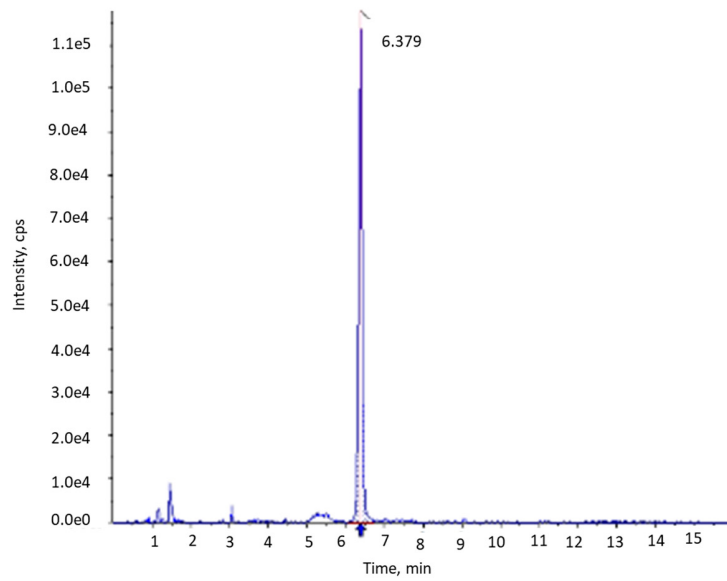




(c)

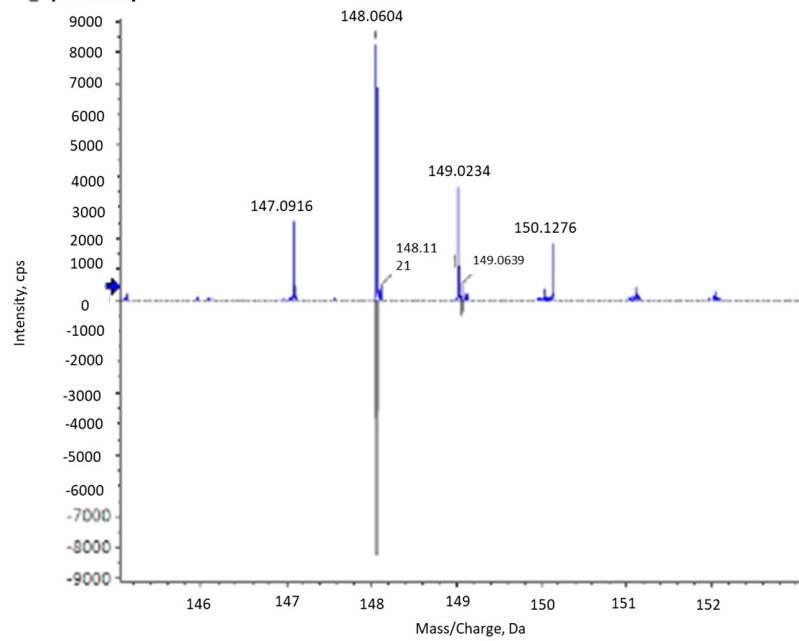
M11- glutamate (Unknown) 148.0504- 148.0704 (Path:.. ids HILIC/ second try/M11b.wiff2).(sample Index:1)

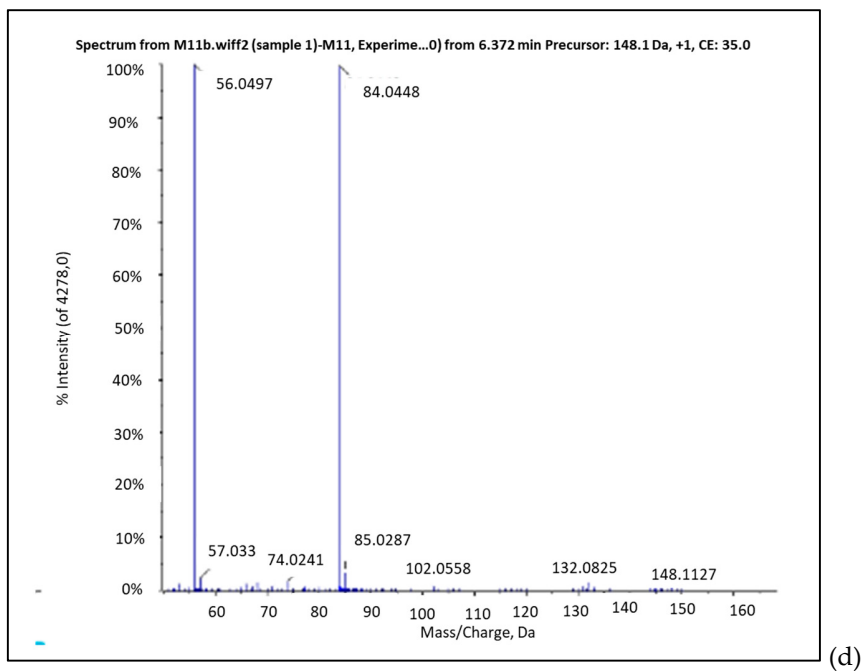
Area: 7.689e5, Height: 1.179e5, RT: 6.38 min



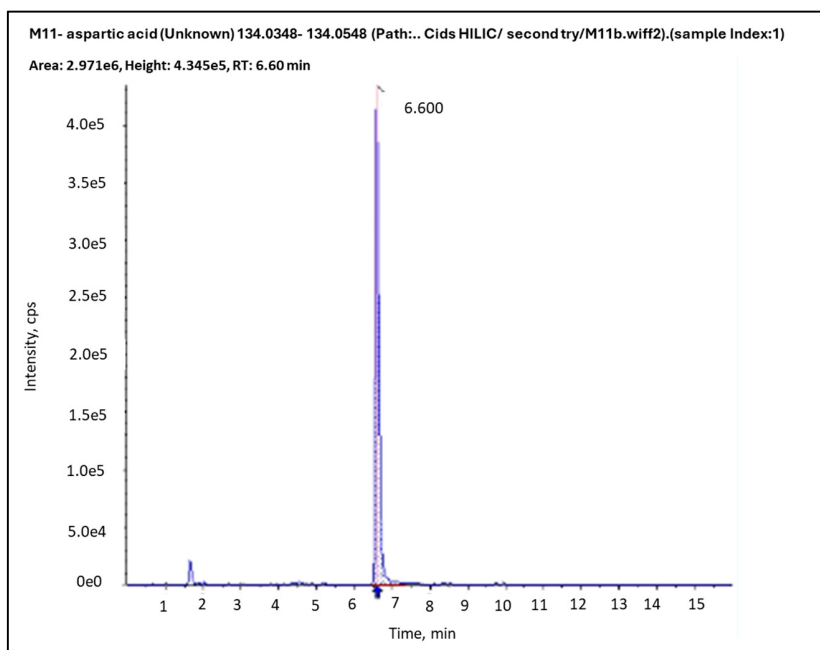
● Spectrum from M11b.wiff2 (sample 1)-M11, E...A TOF MS (50-1000) from 6.424 to 6.463 min

● [C5H9NO4+H]+





(d)



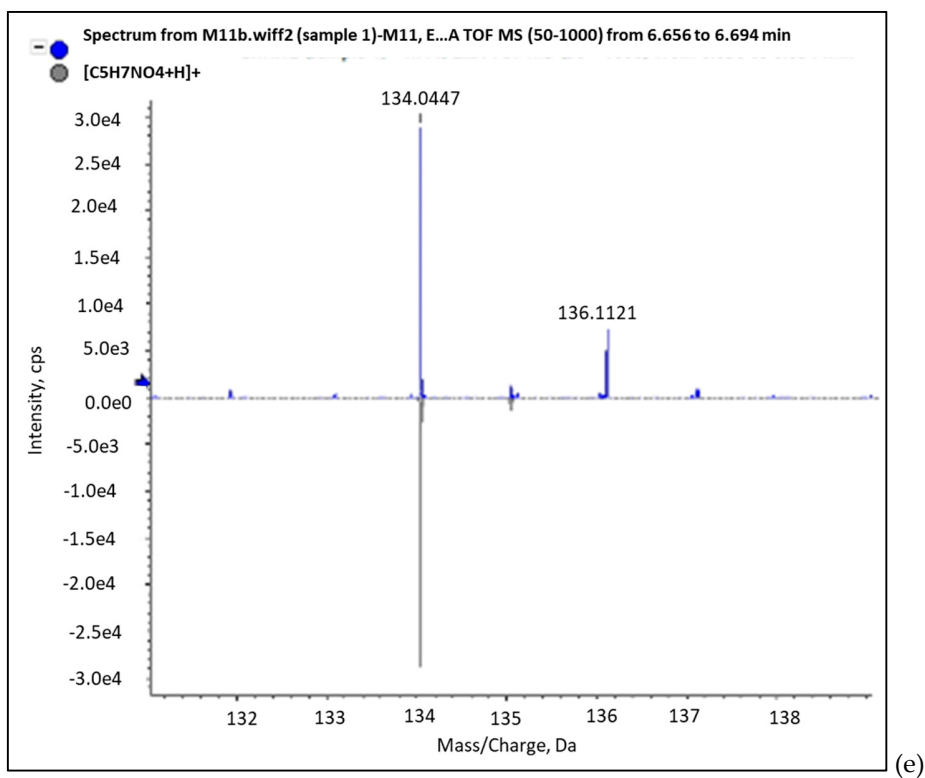
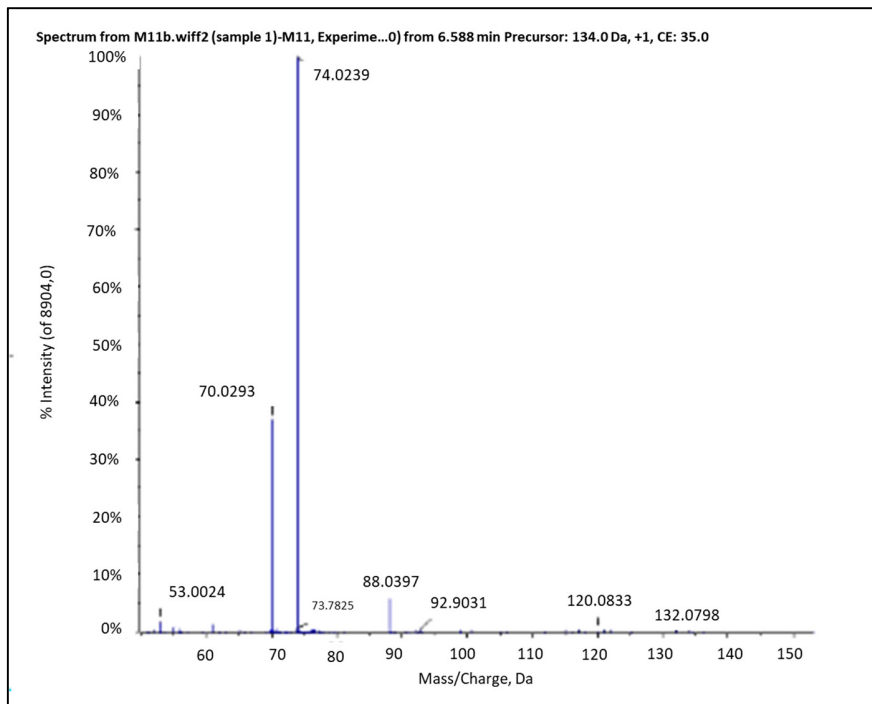
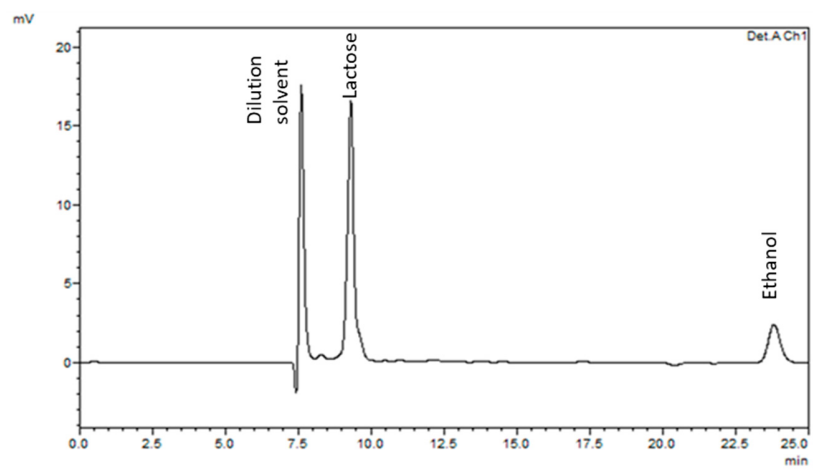
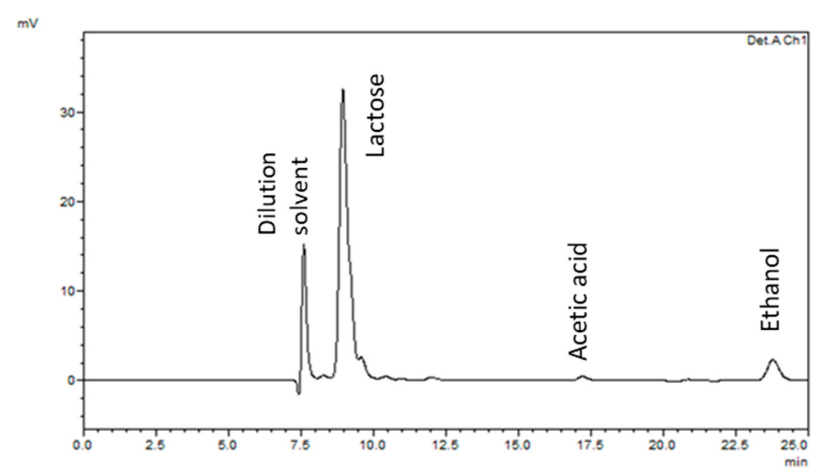


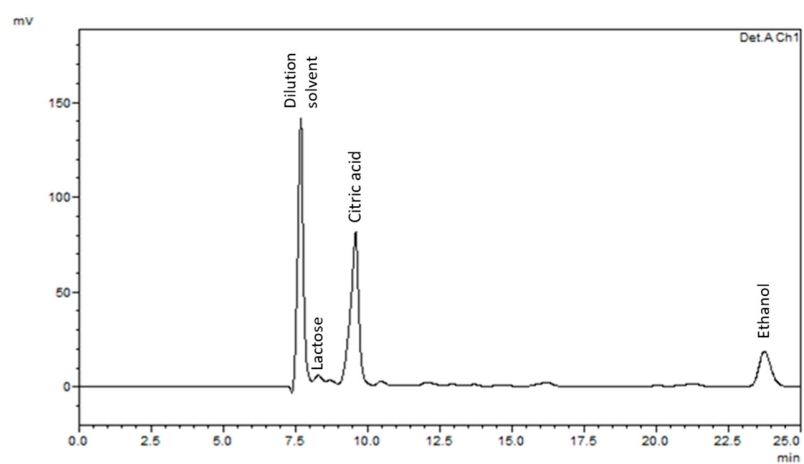
Figure S1. Extracted Ion Chromatograms, MS and MS/MS spectrum of valine (a), leucine (b), isoleucine (c), glutamic acid (d) and aspartic acid (e).



(a)



(b)



(c)

Figure S2. HPLC chromatograms of experiments conducted at initial lactose of 35.0 ± 2.0 g/L at $T = 20.0^\circ\text{C}$ (a), 70.0 ± 5.0 g/L at $T = 20.0^\circ\text{C}$ (b) and 70.0 ± 5.0 g/L at $T = 30.0^\circ\text{C}$ (c).