

Supplementary Materials

Table S1. Isolated strains information of *Listeria monocytogenes* from National Culture Collection for Pathogens

Name	Source	Genotype	Serotype	Antibiotic susceptibility ¹⁾
ATCC 19111	Poultry	Li 20	1/2a	
NCCP 15743	Blood	MLST ST New (7-15-15-10-6-14-9)	1/2a, Antigen O:1,2 H:a,b	Ampicillin: S (0.25 µg/mL) Penicillin G: S (0.5 µg/mL) Erythromycin: S (0.5 µg/mL) Vancomycin: S (2 µg/mL) Tetracycline: R (16 µg/mL) Trimethoprim-Sulfamethoxazole: S (0.5/9.5 µg/mL) Rifampin: S (0.5 µg/mL) Linezolid: S (4 µg/mL)
NCCP 16594	Blood	MLST ST 2687	1/2a, Antigen O:1,2 H:a,b	Ampicillin: S (0.25 µg/mL) Penicillin G: S (0.25 µg/mL) Erythromycin: S (0.5 µg/mL) Vancomycin: S (2 µg/mL) Tetracycline: R (4 µg/mL) Trimethoprim-Sulfamethoxazole: S (0.5/9.5 µg/mL) Rifampin: S (0.5 µg/mL) Linezolid: S (4 µg/mL)

¹⁾ Antibiotic susceptibility is denoted as “S” (susceptible) or “R” (resistant), with the minimum inhibitory concentrations (MICs) provided in µg/mL. MLST, multilocus sequence typing.

Table S2. ^1H and ^{13}C nuclear magnetic resonance (NMR) peak assignments for identified metabolites using Chenomx, correlated spectroscopy (COZY), and heteronuclear single quantum coherence (HSQC) spectroscopy

No.	Metabolites	Chemical shift (δ ^1H , δ ^{13}C ; ppm)
1	Acetate	(1.93, 26.18)
2	Acetoin	(1.36, 20.92), (2.21, 27.55), (4.42, 75.69)
3	Alanine	(1.50, 18.97), (3.81, 53.23)
4	Anserine	(2.71, 34.85), (3.07, 28.65), (3.23, 28.65), (3.23, 38.32), (3.26, 28.83), (3.82, 35.49), (4.51, 56.22), (7.18, 122.10), (8.40, 138.62)
5	Arginine	(1.68, 26.45), (1.91, 30.49), (3.24, 43.32), (3.76, 57.26)
6	Asparagine	(2.92, 37.43), (2.95, 37.34), (2.98, 37.42), (4.03, 54.11)
7	Betaine	(3.28, 56.22), (3.93, 69.04)
8	Carnosine	(2.73, 34.80), (3.08, 30.40), (3.22, 30.27), (3.23, 39.18), (4.49, 57.27), (7.18, 119.64)
9	Ethanol	(1.15, 19.50), (3.67, 60.27)
10	Formate	(8.39, 172.41 ¹⁾)
11	Glutamate	(2.09, 29.78), (2.14, 29.72), (2.37, 36.21), (3.75, 57.27)
12	Glycerol	(3.56, 65.41), (3.65, 65.49), (3.77, 74.98)
13	Glycine	(3.59, 44.27)
14	Histidine	(3.21, 30.08), (3.27, 30.20), (3.29, 30.20), (4.00, 57.28), (7.14, 119.99), (8.03, 138.37)
15	Isoleucine	(0.95, 13.88), (0.96, 26.88), (1.02, 17.57), (1.28, 27.25), (1.99, 38.65), (3.69, 62.37)
16	Lactate	(1.35, 71.33), (4.10, 71.15)
17	Leucine	(0.96, 23.74), (0.97, 24.94), (1.70, 42.59), (1.72, 27.06), (1.75, 42.61), (3.75, 56.22)
18	Lysine	(1.49, 24.04), (1.72, 29.15), (1.88, 32.65), (3.02, 42.12), (3.75, 57.45)
19	Methnanol	(3.37, 51.43)
20	Methionine	(2.14, 16.69), (2.15, 32.43), (2.21, 32.41), (2.65, 31.60), (3.88, 56.57)
21	Phenylalanine	(4.01, 58.86), (7.31, 132.29), (7.35, 130.54), (7.41, 131.94)
22	Proline	(2.03, 26.56), (2.09, 31.64), (2.36, 31.81), (3.36, 48.85), (3.43, 48.85), (4.15, 63.95)
23	Propionate	(1.04, 12.99), (2.17, 33.48)
24	Pyroglutamate	(2.01, 27.98), (2.38, 32.28), (2.49, 27.98), (4.16, 60.97)
25	Sarcosine	(2.72, 35.57), (3.59, 53.50)
26	Serine	(3.87, 59.21), (3.97, 63.06), (4.01, 63.06)
27	Threonine	(1.35, 21.79), (4.28, 68.69)
28	Trehalose	(3.44, 72.47), (3.64, 73.78), (3.76, 63.31), (3.81, 74.88), (3.85, 75.35), (3.86, 63.34), (5.18, 95.98)
29	Tryptophan	(4.03, 30.05), (7.43, 114.72), (7.65, 121.23)
30	Tyramine	(2.93, 34.63), (3.26, 43.70), (6.90, 118.55), (7.22, 133.06)
31	Tyrosine	(3.07, 38.43), (3.96, 58.86), (3.95, 58.86), (6.89, 118.77), (7.20, 133.70)
32	Valine	(1.00, 19.50), (1.05, 20.73), (2.29, 31.98), (3.62, 63.25)

¹⁾ Identified through Chenomx and the human metabolites database (HMDB).

Table S3. Metabolites changes in *Listeria monocytogenes* NCCP 15743 by growth phase

Compound	M	Initial	Lag	Log	Early	Saturate	SEM
Acetate	0.564 ^{cd}	0.489 ^c	0.563 ^{cd}	0.625 ^{bcd}	0.737 ^b	1.064 ^a	0.0288
Acetoin	0.293 ^b	0.279 ^b	0.264 ^b	0.541 ^a	0.32 ^b	0.346 ^b	0.0235
Alanine	0.915 ^{cb}	0.802 ^{cd}	0.731 ^d	1.135 ^a	0.967 ^{abc}	1.107 ^{ab}	0.0430
Anserine	0.565 ^a	0.459 ^b	0.445 ^b	0.636 ^a	0.598 ^a	0.649 ^a	0.0239
Arginine	3.348 ^{ab}	3.199 ^{ab}	2.651 ^b	3.976 ^a	3.552 ^a	3.867 ^a	0.1965
Asparagine	0.833 ^b	0.769 ^b	0.69 ^b	1.121 ^a	0.896 ^{ab}	1.073 ^a	0.0521
Betaine	0.142 ^{abc}	0.134 ^{bc}	0.114 ^c	0.175 ^a	0.138 ^{bc}	0.155 ^{ab}	0.0082
Carnosine	0.502 ^{ab}	0.475 ^{ab}	0.37 ^b	0.614 ^a	0.484 ^{ab}	0.6 ^a	0.0327
Ethanol	0.956 ^{ab}	0.731 ^c	0.847 ^{bc}	1.051 ^a	0.812 ^{bc}	0.859 ^{bc}	0.0409
Formate	0.158 ^{bc}	0.127 ^{bc}	0.143 ^{bc}	0.083 ^c	0.198 ^b	0.583 ^a	0.0182
Glutamate	2.754 ^{bc}	2.738 ^{bc}	2.398 ^c	4.117 ^a	3.162 ^{abc}	3.529 ^{ab}	0.2304
Glycerol	1.283 ^b	0.906 ^b	1.238 ^b	1.353 ^b	1.128 ^b	3.216 ^a	0.3099
Glycine	0.294 ^{abc}	0.263 ^{bc}	0.235 ^c	0.371 ^a	0.27 ^{bc}	0.34 ^{ab}	0.0181
Histidine	0.588 ^{abc}	0.554 ^{bc}	0.463 ^c	0.719 ^a	0.602 ^{abc}	0.692 ^{ab}	0.0328
Isoleucine	2.032 ^{bc}	1.96 ^{bc}	1.734 ^c	3.007 ^a	2.248 ^{bc}	2.463 ^{ab}	0.1688
Lactate	1.194 ^c	1.04 ^c	1.03 ^c	1.725 ^a	1.265 ^{bc}	1.616 ^{ab}	0.0885
Leucine	6.783 ^{ab}	5.99 ^b	5.479 ^b	8.265 ^a	6.932 ^{ab}	8.077 ^a	0.3724
Lysine	20.946 ^{ab}	19.47 ^{ab}	17.524 ^b	24.559 ^b	20.543 ^{ab}	24.149 ^a	1.1230
Methanol	0.027 ^{bc}	0.022 ^c	0.032 ^{bc}	0.043 ^a	0.034 ^{ab}	0.023 ^{bc}	0.0024
Methionine	1.389 ^{ab}	1.25 ^{bc}	1.153 ^b	1.591 ^a	1.426 ^{ab}	1.585 ^{abc}	0.0747
Phenylalanine	3.449 ^{ab}	3.093 ^{bc}	2.784 ^c	4.157 ^a	3.573 ^{ab}	4.074 ^a	0.1503
Proline	0.183 ^{abc}	0.088 ^{bc}	0.085 ^b	0.276 ^a	0.126 ^{bc}	0.154 ^{bc}	0.0197
Propionate	0.108 ^{bc}	0.107 ^{bc}	0.095 ^c	0.462 ^a	0.174 ^b	0.132 ^{bc}	0.0188
Pyroglutamate	3.171 ^{cd}	2.762 ^{cd}	2.412 ^d	4.176 ^a	3.399 ^{abc}	3.705 ^{ab}	0.1804
Sarcosine	0.129 ^{abc}	0.12 ^{bc}	0.112 ^c	0.17 ^a	0.14 ^{abc}	0.16 ^{ab}	0.0103
Serine	1.900 ^{bc}	1.547 ^{cd}	1.327 ^d	2.604 ^a	1.956 ^{bc}	2.194 ^{ab}	0.1206
Threonine	7.493 ^{ab}	7.209 ^{ab}	5.936 ^b	7.115 ^b	7.596 ^{ab}	8.953 ^a	0.3907
Trehalose	0.981 ^{ab}	0.93 ^{ab}	0.832 ^b	1.157 ^a	0.528 ^c	0 ^d	0.0662
Tryptophan	1.104 ^{ab}	1.038 ^b	0.929 ^b	1.366 ^a	1.202 ^{ab}	1.334 ^a	0.0651
Tyramine	0.161 ^{bc}	0.138 ^c	0.126 ^c	0.196 ^{ab}	0.166 ^{abc}	0.212 ^a	0.0113
Tyrosine	0.689 ^{ab}	0.684 ^{ab}	0.573 ^b	0.741 ^a	0.719 ^{ab}	0.814 ^a	0.0374
Valine	1.916 ^{bc}	1.728 ^c	1.606 ^c	2.405 ^a	1.902 ^{bc}	2.307 ^{ab}	0.1134

^{a-d} Means with different letters within the same row are significantly different (p<0.05).

Table S4. Metabolites changes in *Listeria monocytogenes* NCCP 16594 by growth phase

Compound	M	Initial	Lag	Log	Early	Saturate	SEM
Acetate	0.564 ^b	0.496 ^b	0.579 ^b	0.449 ^b	0.857 ^a	0.952 ^a	0.0274
Acetoin	0.293 ^b	0.274 ^b	0.390 ^a	0.284 ^b	0.303 ^b	0.294 ^b	0.0132
Alanine	0.915 ^b	0.882 ^b	1.154 ^a	0.947 ^b	0.951 ^b	0.906 ^b	0.0321
Anserine	0.565 ^b	0.573 ^{ab}	0.673 ^a	0.545 ^b	0.574 ^{ab}	0.566 ^b	0.0253
Arginine	3.348 ^b	3.289 ^b	4.562 ^a	3.555 ^b	3.679 ^b	3.391 ^b	0.1604
Asparagine	0.833 ^b	0.864 ^b	1.093 ^a	0.915 ^b	0.935 ^{ab}	0.939 ^{ab}	0.0349
Betaine	0.142 ^b	0.140 ^b	0.186 ^a	0.145 ^b	0.140 ^b	0.129 ^b	0.0051
Carnosine	0.502 ^b	0.463 ^b	0.696 ^a	0.527 ^b	0.565 ^b	0.485 ^b	0.0235
Ethanol	0.956 ^b	0.847 ^b	1.382 ^a	0.791 ^b	0.790 ^b	0.836 ^b	0.0541
Formate	0.158 ^a	0.123 ^a	0.153 ^a	0.120 ^a	0.502 ^b	0.503 ^b	0.0162
Glutamate	2.754 ^b	2.708 ^b	3.662 ^a	2.871 ^b	3.037 ^b	2.828 ^b	0.1138
Glycerol	1.283 ^b	1.616 ^b	6.377 ^a	0.657 ^b	1.644 ^b	0.690 ^b	0.5995
Glycine	0.294	0.259	0.248	0.290	0.305	0.284	0.0154
Histidine	0.588 ^b	0.564 ^b	0.764 ^a	0.607 ^b	0.649 ^{ab}	0.597 ^b	0.0277
Isoleucine	2.032 ^b	1.934 ^b	2.681 ^a	2.076 ^b	2.123 ^b	2.008 ^b	0.0718
Lactate	1.194 ^a	0.923 ^{bc}	0.762 ^{abc}	1.038 ^{ab}	0.692 ^d	0.650 ^d	0.0489
Leucine	6.783 ^b	6.620 ^b	8.732 ^a	6.984 ^b	7.255 ^b	6.840 ^b	0.2288
Lysine	20.946 ^b	20.382 ^b	27.584 ^a	21.462 ^b	22.473 ^b	20.242 ^b	0.8220
Methanol	0.027 ^b	0.029 ^{ab}	0.035 ^a	0.028 ^b	0.027 ^b	0.023 ^b	0.0013
Methionine	1.389 ^b	1.326 ^b	1.775 ^a	1.388 ^b	1.450 ^b	1.356 ^b	0.0487
Phenylalanine	3.449 ^b	3.425 ^b	4.540 ^a	3.590 ^b	3.713 ^b	3.472 ^b	0.1389
Proline	0.183 ^a	0.092 ^c	0.109 ^{bc}	0.093 ^c	0.160 ^{ab}	0.128 ^{bc}	0.0101
Propionate	0.108 ^b	0.099 ^b	0.144 ^a	0.108 ^b	0.117 ^b	0.112 ^b	0.0041
Pyroglutamate	3.171 ^b	3.065 ^b	3.973 ^a	3.235 ^b	3.291 ^b	3.090 ^b	0.1200
Sarcosine	0.129 ^b	0.118 ^b	0.172 ^a	0.124 ^b	0.137 ^b	0.125 ^b	0.0050
Serine	1.900 ^b	1.631 ^b	2.341 ^a	1.736 ^b	1.928 ^b	1.772 ^b	0.0796
Threonine	7.493 ^b	7.500 ^b	9.940 ^a	7.824 ^b	8.007 ^b	7.420 ^b	0.3064
Trehalose	0.981 ^b	0.957 ^b	1.282 ^a	1.004 ^b	0.025 ^c	0.000 ^c	0.0319
Tryptophan	1.104 ^b	1.129 ^b	1.532 ^a	1.201 ^b	1.229 ^b	1.120 ^b	0.0521
Tyramine	0.161 ^b	0.168 ^b	0.210 ^a	0.171 ^b	0.179 ^{ab}	0.180 ^{ab}	0.0060
Tyrosine	0.689 ^b	0.684 ^b	0.925 ^a	0.694 ^b	0.735 ^b	0.706 ^b	0.0299
Valine	1.916 ^b	1.834 ^b	2.435 ^a	1.909 ^b	2.019 ^b	1.872 ^b	0.0714

^{a-c} Means with different letters within the same row are significantly different (p<0.05).

Table S5. Metabolites changes in *Listeria monocytogenes* ATCC 19111 by growth phase

Compound	M	Initial	Lag	Log	Early	Saturate	SEM
Acetate	0.564 ^b	0.604 ^b	0.549 ^b	0.519 ^b	0.698 ^{ab}	0.903 ^a	0.0494
Acetoin	0.293 ^{ab}	0.360 ^b	0.332 ^b	0.260 ^a	0.317 ^{ab}	0.299 ^{ab}	0.0155
Alanine	0.915	1.030	1.066	1.012	1.032	0.988	0.0425
Anserine	0.565	0.598	0.603	0.594	0.631	0.621	0.0251
Arginine	3.348 ^b	3.732 ^{ab}	3.967 ^{ab}	3.780 ^{ab}	4.053 ^a	3.889 ^{ab}	0.1390
Asparagine	0.833 ^b	0.966 ^{ab}	0.979 ^{ab}	0.958 ^{ab}	1.025 ^a	1.026 ^a	0.0315
Betaine	0.142	0.163	0.166	0.161	0.158	0.146	0.0069
Carnosine	0.502	0.573	0.606	0.533	0.562	0.510	0.0217
Ethanol	0.956	0.945	1.106	0.987	0.936	1.145	0.0633
Formate	0.158 ^a	0.118 ^{abc}	0.129 ^{ab}	0.082 ^c	0.102 ^{bc}	0.150 ^a	0.0069
Glutamate	2.754 ^b	3.230 ^{ab}	3.180 ^{ab}	3.084 ^{ab}	3.383 ^a	3.380 ^a	0.1127
Glycerol	1.283 ^{bc}	2.335 ^{ab}	2.459 ^a	0.975 ^c	0.760 ^c	0.804 ^c	0.2602
Glycine	0.294	0.295	0.298	0.294	0.320	0.302	0.0153
Histidine	0.588	0.681	0.689	0.653	0.686	0.667	0.0293
Isoleucine	2.032	2.415	2.268	2.222	2.403	2.421	0.0886
Lactate	1.194 ^a	0.788 ^b	0.785 ^b	0.785 ^b	0.735 ^b	0.797 ^b	0.0740
Leucine	6.783	7.087	7.382	7.657	7.614	7.246	0.3300
Lysine	20.946	23.730	24.568	23.822	24.531	23.147	1.0041
Methanol	0.027 ^{bc}	0.027 ^{bc}	0.029 ^{bc}	0.021 ^c	0.032 ^{ab}	0.041 ^a	0.0021
Methionine	1.389	1.597	1.593	1.523	1.583	1.507	0.0744
Phenylalanine	3.449 ^b	3.907 ^{ab}	4.053 ^{ab}	3.859 ^{ab}	4.116 ^a	4.013 ^{ab}	0.1288
Proline	0.183 ^b	0.139 ^{ab}	0.105 ^a	0.125 ^{ab}	0.116 ^{ab}	0.136 ^{ab}	0.0100
Propionate	0.108 ^b	0.162 ^a	0.130 ^{ab}	0.125 ^{ab}	0.129 ^{ab}	0.111 ^{ab}	0.0130
Pyroglutamate	3.171	3.480	3.602	3.519	3.651	3.526	0.1496
Sarcosine	0.129	0.144	0.147	0.137	0.147	0.138	0.0068
Serine	1.900	1.933	1.963	1.980	2.161	2.000	0.0774
Threonine	7.493	8.217	8.691	8.557	8.884	8.412	0.3732
Trehalose	0.981 ^{ab}	1.066 ^a	1.126 ^a	1.107 ^a	0.871 ^b	0.323 ^c	0.0328
Tryptophan	1.104	1.290	1.346	1.320	1.348	1.294	0.0601
Tyramine	0.161 ^b	0.201 ^a	0.191 ^{ab}	0.176 ^{ab}	0.201 ^a	0.186 ^{ab}	0.0063
Tyrosine	0.689 ^b	0.760 ^{ab}	0.798 ^{ab}	0.807 ^{ab}	0.832 ^a	0.792 ^{ab}	0.0261
Valine	1.916	2.093	2.110	2.055	2.225	2.163	0.0703

^{a-c} Means with different letters within the same row are significantly different (p<0.05).