Supplemental Table S1. Average populations of indigenous microorganisms (log CFU/ml) in commercial cheese brines treated with 0, 50, or 100 ppm hydrogen peroxide and assayed at days 0, 1, and 7 (average for three storage temperatures, triplicate seasonal lots, duplicate samples per lot). Standard plate count (PCA), lactic acid bacteria (MRS), yeast and mold (YM).

		PCA			MRS			YM[a]		
Brine	ppm H_2O_2	0	1	7	0	1	7	0	1	7
A- Parmesan	0	1.55	1.21	2.19	2.90	3.11	3.09	1.12	1.17	1.26
A- Parmesan	50	1.26	0.99	1.68	2.47	2.33	2.43	1.28	1.18	1.02
A- Parmesan	100	1.04	0.94	1.03	2.02	2.07	1.30	1.26	1.10	<1.18
H- Parmesan	0	1.58	2.21	1.87	1.88	2.44	2.26	<1.18	<1.18	<1.18
H- Parmesan	50	1.68	2.03	1.43	1.77	2.26	1.53	<1.18	<1.18	<1.18
H- Parmesan	100	1.61	1.66	1.42	1.45	2.13	1.37	<1.18	<1.18	<1.18
B- Brick	0	2.26	3.44	3.30	1.31	1.40	1.44	<1.18	<1.18	<1.18
B- Brick	50	2.11	2.86	2.37	1.15	1.22	1.50	<1.18	<1.18	<1.18
B- Brick	100	1.57	2.54	2.14	1.16	1.24	1.45	<1.18	<1.18	<1.18
J- Brick	0	2.05	2.42	2.01	2.72	3.56	2.50	2.63	2.53	3.05
J- Brick	50	1.95	2.42	2.02	2.44	3.58	2.51	2.64	2.45	2.89
J- Brick	100	2.36	2.26	2.19	2.30	3.71	2.37	2.70	2.60	2.42
C- Blue/Gorgonzola	0	2.66	2.27	1.78	1.49	1.81	1.48	3.37	2.98	2.59
C- Blue/Gorgonzola	50	2.45	2.08	1.54	1.32	1.54	1.45	3.27	3.24	2.69
C- Blue/Gorgonzola	100	1.93	1.92	1.38	1.44	1.74	1.73	3.25	3.26	2.81
D- Mozzarella	0	1.19	1.84	1.72	1.55	1.41	2.24	1.39	1.03	1.05
D- Mozzarella	50	1.26	1.44	1.01	1.20	1.35	1.07	1.52	1.07	<1.18
D- Mozzarella	100	1.46	1.35	0.96	1.22	1.41	1.09	1.91	<1.18	1.23
E- Feta	0	1.77	2.45	2.33	2.72	2.84	2.63	<1.18	<1.18	<1.18
E- Feta	50	0.97	2.38	1.69	2.34	2.71	1.31	<1.18	<1.18	<1.18
E- Feta	100	1.01	2.24	2.28	2.46	2.10	2.80	<1.18	<1.18	<1.18

[a] Colonies from Brick J were primarily yeasts, whereas colonies form Blue/Gorgonzola C were primarily filamentous molds.

Supplemental Table S2. Populations (average ± standard deviation log CFU/ml; three seasonal trials, triplicate samples per interval) of *Listeria monocytogenes* (log change) in used commercial brine (Experiment 2) treated with 0, 50, and 100 ppm hydrogen peroxide and stored at 12.8°C for up to 7 days.

Brine Type	pH	% NaCl	PPM hydrogen peroxide 0	50	100
			Populations *L. monocytogenes* log CFU/ml		
Day 0					
A- Parmesan	5.04	21.92	5.55±0.30	5.53±0.14	5.48±0.21
H- Parmesan	5.10	28.01	5.95±0.17	5.68±0.29	5.65±0.27
B- Brick	5.16	27.88	5.95±0.17	5.68±0.29	5.65±0.27
J- Brick	5.50	16.19	6.02±0.52	6.01±0.48	6.05±0.44
C- Blue/Gorgonzola	4.60	21.48	5.68±0.32	5.60±0.24	5.56±0.28
D- Mozzarella	5.38	26.50	5.88±0.08	5.89±0.06	5.85±0.08
E- Feta	4.54	16.53	5.30±0.34	5.27±0.28	5.22±0.25
Day 1					
A- Parmesan	5.04	21.92	5.40±0.19	5.14±0.35	4.86±0.21
H- Parmesan	5.10	28.01	5.68±0.12	5.43±0.24	5.19±0.27
B- Brick	5.16	27.88	6.07±0.41	5.42±0.23	5.34±0.14
J- Brick	5.50	16.19	6.05±0.45	5.95±0.42	5.85±0.52
C- Blue/Gorgonzola	4.60	21.48	5.54±0.32	5.14±0.35	4.70±0.41
D- Mozzarella	5.38	26.50	5.84±0.11	5.64±0.11	5.40±0.18
E- Feta	4.54	16.53	4.80±0.41	4.22±0.41	2.77±1.55
Day 7					
A- Parmesan	5.04	21.92	4.80±0.48	2.43±0.51	<1.18
H- Parmesan	5.10	28.01	5.55±0.17	1.29±0.44	<1.18
B- Brick	5.16	27.88	5.60±0.09	<1.18	<1.18
J- Brick	5.50	16.19	5.88±0.45	5.57±0.77	5.50±0.95
C- Blue/Gorgonzola	4.60	21.48	5.02±0.43	<1.18	<1.18
D- Mozzarella	5.38	26.50	5.72±0.16	<1.18	<1.18
E- Feta	4.54	16.53	4.12±0.28	<1.18	<1.18

Supplemental Table S3. Populations (average ± standard deviation log CFU/ml; three seasonal trials, triplicate samples per interval) of *Listeria monocytogenes* in used commercial brine (Experiment 2) treated with 0, 50, and 100 ppm hydrogen peroxide and stored at 7.2°C for up to 7 days.

	Average		PPM hydrogen peroxide		
Brine Type	pH	% NaCl	0	50	100
			Populations *L. monocytogenes* log CFU/ml		
Day 0					
A- Parmesan	5.04	21.92	5.55±0.30	5.53±0.14	5.48±0.21
H- Parmesan	5.10	28.01	5.95±0.17	5.68±0.29	5.65±0.27
B- Brick	5.16	27.88	5.95±0.17	5.68±0.29	5.65±0.27
J- Brick	5.50	16.19	6.02±0.52	6.01±0.48	6.05±0.44
C- Blue/Gorgonzola	4.60	21.48	5.68±0.32	5.60±0.24	5.56±0.28
D- Mozzarella	5.38	26.50	5.88±0.08	5.89±0.06	5.85±0.08
E- Feta	4.54	16.53	5.30±0.34	5.27±0.28	5.22±0.25
Day 1					
A- Parmesan	5.04	21.92	5.36±0.22	5.15±0.17	5.04±0.26
H- Parmesan	5.10	28.01	5.71±0.13	5.56±0.18	5.38±0.21
B- Brick	5.16	27.88	5.78±0.08	5.47±0.45	5.59±0.14
J- Brick	5.50	16.19	6.02±0.41	5.93±0.44	5.96±0.49
C- Blue/Gorgonzola	4.60	21.48	5.53±0.32	5.28±0.35	5.21±0.40
D- Mozzarella	5.38	26.50	5.90±0.10	5.68±0.12	5.63±0.16
E- Feta	4.54	16.53	4.86±0.40	4.59±0.27	4.14±0.62
Day 7					
A- Parmesan	5.04	21.92	5.27±0.30	4.10±0.20	<1.18
H- Parmesan	5.10	28.01	5.60±0.18	4.25±0.19	<1.18
B- Brick	5.16	27.88	5.70±0.12	1.77±1.07	<1.18
J- Brick	5.50	16.19	5.93±0.48	5.67±0.72	5.57±0.94
C- Blue/Gorgonzola	4.60	21.48	5.09±0.39	3.31±0.37	<1.18
D- Mozzarella	5.38	26.50	5.72±0.12	1.59±0.74	<1.18
E- Feta	4.54	16.53	4.20±0.50	2.22±0.93	<1.18

Supplemental Table S4. Populations (average ± standard deviation log CFU/ml; three seasonal trials, duplicate samples per interval) of *Listeria monocytogenes* in used commercial brine (Experiment 2) treated with 0, 50, and 100 ppm hydrogen peroxide and stored at 0°C for up to 7 days.

	Average		PPM hydrogen peroxide		
Brine Type	pH	% NaCl	0	50	100
			Populations *L. monocytogenes* log CFU/ml		
Day 0					
A- Parmesan	5.04	21.92	5.55±0.30	5.53±0.14	5.48±0.21
H- Parmesan	5.10	28.01	5.95±0.17	5.68±0.29	5.65±0.27
B- Brick	5.16	27.88	5.95±0.17	5.68±0.29	5.65±0.27
J- Brick	5.50	16.19	6.02±0.52	6.01±0.48	6.05±0.44
C- Blue/Gorgonzola	4.60	21.48	5.68±0.32	5.60±0.24	5.56±0.28
D- Mozzarella	5.38	26.50	5.88±0.08	5.89±0.06	5.85±0.08
E- Feta	4.54	16.53	5.30±0.34	5.27±0.28	5.22±0.25
Day 1					
A- Parmesan	5.04	21.92	5.36±0.20	5.38±0.29	5.19±0.24
H- Parmesan	5.10	28.01	5.75±0.07	5.66±0.13	5.63±0.14
B- Brick	5.16	27.88	5.76±0.09	5.66±0.16	5.68±0.08
J- Brick	5.50	16.19	6.02±0.41	5.98±0.48	5.93±0.44
C- Blue/Gorgonzola	4.60	21.48	5.56±0.35	5.34±0.31	5.30±0.30
D- Mozzarella	5.38	26.50	5.87±0.09	5.71±0.17	5.65±0.16
E- Feta	4.54	16.53	4.87±0.39	4.67±0.44	4.47±0.53
Day 7					
A- Parmesan	5.04	21.92	5.29±0.34	4.83±0.27	2.70±1.32
H- Parmesan	5.10	28.01	5.62±0.15	5.22±0.12	1.51±0.81
B- Brick	5.16	27.88	5.71±0.12	4.77±0.32	1.61±0.90
J- Brick	5.50	16.19	5.94±0.47	6.05±0.92	5.71±0.78
C- Blue/Gorgonzola	4.60	21.48	5.10±0.41	5.01±0.17	2.18±0.95
D- Mozzarella	5.38	26.50	5.67±0.17	4.42±0.13	<1.18
E- Feta	4.54	16.53	4.58±0.51	3.40±1.50	<1.18

Supplemental Table S5. Populations (average ± standard deviation log CFU/ml; three seasonal trials, duplicate samples per interval) of *Staphylococcus aureus* in used commercial brine (Experiment 2) treated with 0, 50, and 100 ppm hydrogen peroxide and stored at 12.8°C for up to 7 days.

Brine Type	Average pH	Average % NaCl	PPM hydrogen peroxide 0	PPM hydrogen peroxide 50	PPM hydrogen peroxide 100
			Populations *S. aureus* log CFU/ml		
Day 0					
A- Parmesan	5.04	21.92	5.05±0.38	5.00±0.41	5.05±0.45
H- Parmesan	5.10	28.01	5.11±0.34	5.04±0.34	4.87±0.36
B- Brick	5.16	27.88	5.05±0.35	4.96±0.39	4.94±0.41
J- Brick	5.50	16.19	5.14±0.30	5.03±0.39	5.03±0.35
C- Blue/Gorgonzola	4.60	21.48	5.06±0.49	4.82±0.49	4.77±0.41
D- Mozzarella	5.38	26.50	5.06±0.46	5.03±0.42	4.98±0.48
E- Feta	4.54	16.53	4.97±0.16	4.66±0.43	4.57±0.45
Day 1					
A- Parmesan	5.04	21.92	4.53±0.47	3.89±0.51	3.75±0.54
H- Parmesan	5.10	28.01	4.67±0.62	4.04±0.45	3.86±0.62
B- Brick	5.16	27.88	4.64±0.53	4.15±0.33	4.03±0.38
J- Brick	5.50	16.19	4.84±0.47	4.24±0.41	4.08±0.55
C- Blue/Gorgonzola	4.60	21.48	4.43±0.34	3.75±0.46	3.49±0.32
D- Mozzarella	5.38	26.50	4.83±0.48	4.28±0.38	3.99±0.49
E- Feta	4.54	16.53	4.25±0.44	3.64±0.47	3.12±0.63
Day 7					
A- Parmesan	5.04	21.92	4.12±0.45	1.78±0.83	<1.18
H- Parmesan	5.10	28.01	4.52±0.58	<1.18	<1.18
B- Brick	5.16	27.88	4.63±0.67	1.07±0.16	<1.18
J- Brick	5.50	16.19	4.73±0.73	4.04±0.78	3.83±0.97
C- Blue/Gorgonzola	4.60	21.48	3.95±0.57	1.18±0.30	<1.18
D- Mozzarella	5.38	26.50	4.76±0.71	<1.18	<1.18
E- Feta	4.54	16.53	3.64±0.62	<1.18	<1.18

Supplemental Table S6. Summary of effects tests for parameters tested in Experiment 1 for inactivation of *L. monocytogenes* in filtered fresh brines.

Source	Nparm	DF	Sum of Squares	F Ratio	Prob >F
% salt (10, 20%)	1	1	11.64550	8.9621	0.0029
pH (4.6, 5.4)	1	1	0.21477	0.1653	0.6845
Temperature (10, 15.6°C)	1	1	30.08221	23.1505	<0.001
H_2O_2 (0, 50, 100 PPM)	2	2	581.64215	223.8084	<0.001
Time (0, 1, 7 d)	2	2	917.55946	353.0805	<0.001

Supplemental Table S7. Summary of effects tests for parameters tested in Experiment 2 for inactivation of *L. monocytogenes* in unfiltered commercial (used) brines.

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
Brine type (8 brines)[a]	6	6	403.3152	68.0805	<0.0001*
Temperature (0, 7.2, 12.8°C)	2	2	50.3395	25.4923	<0.0001*
H2O2 (0, 50, 100 ppm)	2	2	458.3644	232.1187	<0.0001*
Time (0, 1, 7 day)	2	2	1534.6497	777.1567	<0.0001*

[a] Significant difference in the effect of cheese brine type is due to low standard deviations between replicate samples and for the effect of Brick J, in which H_2O_2 was inactivated by indigenous microbes.

Figure S1. Graphical representation of Experiment 1 Design for fresh, filtered, lab prepared brine.

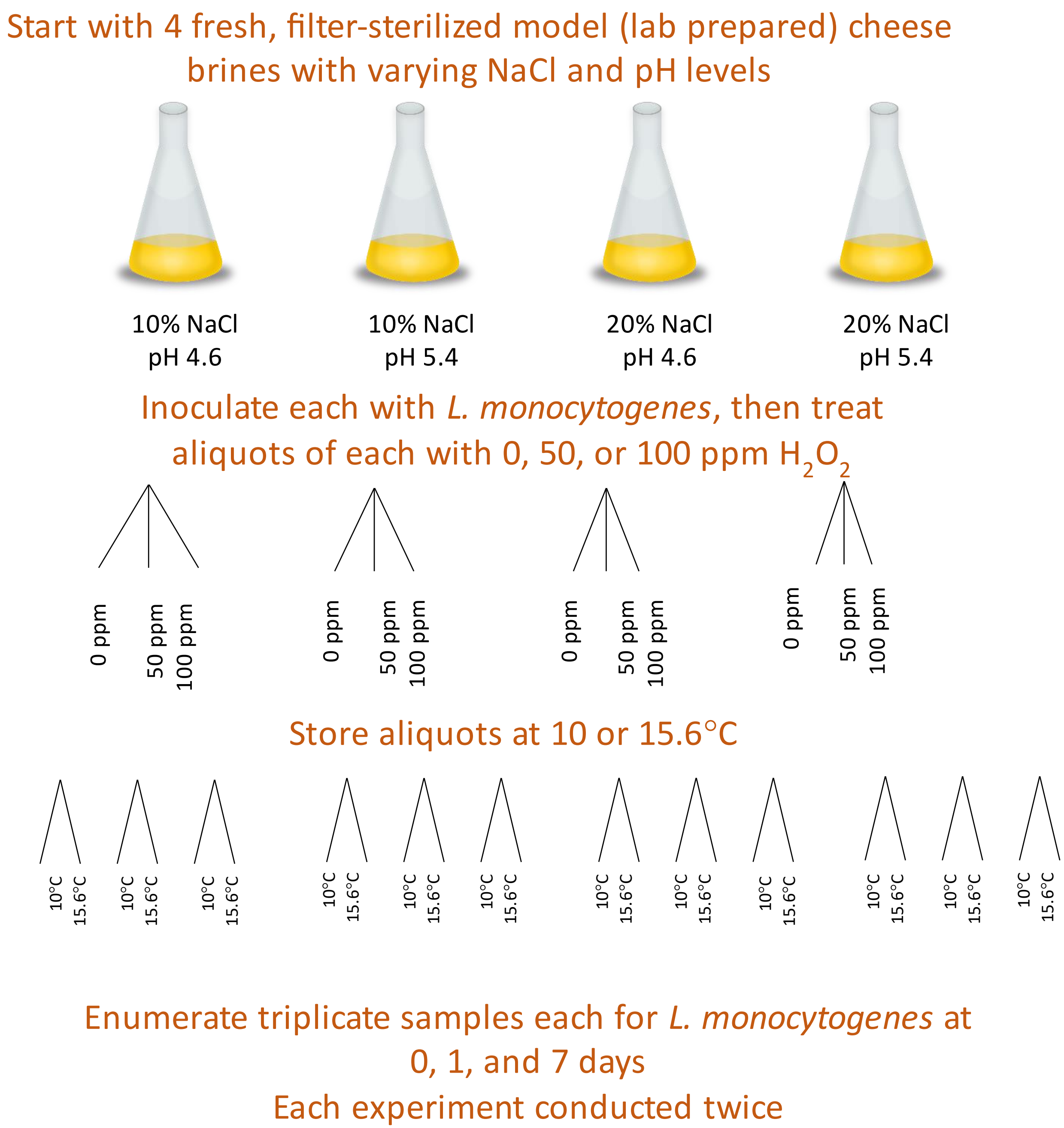


Figure S2. Graphical representation of Experiment 2 design for unfiltered commercial used brines.

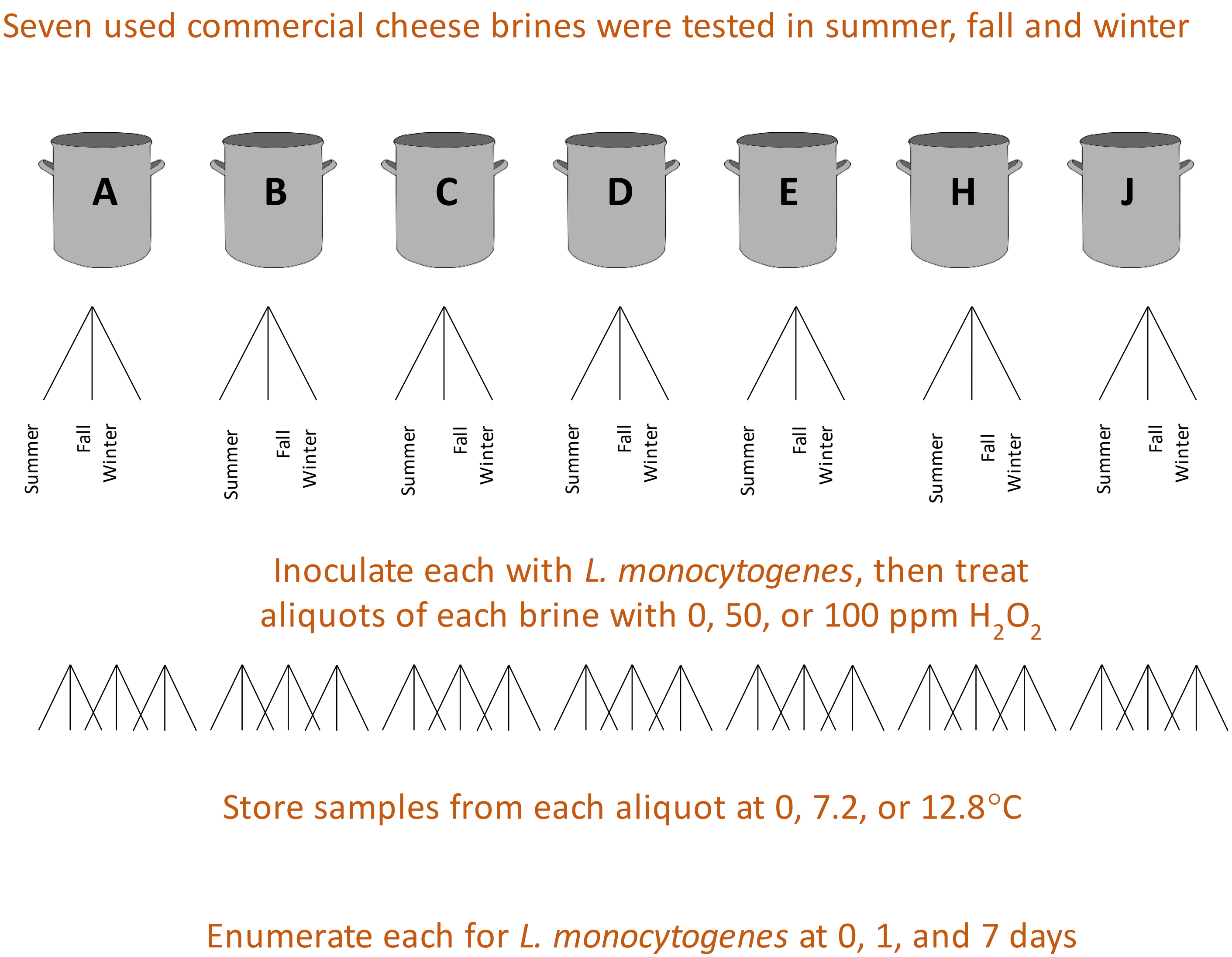


Figure S3. Least Square Means Plots for the effect of pH vs. time for three levels of hydrogen peroxide (Experiment 1, fresh filtered brines)

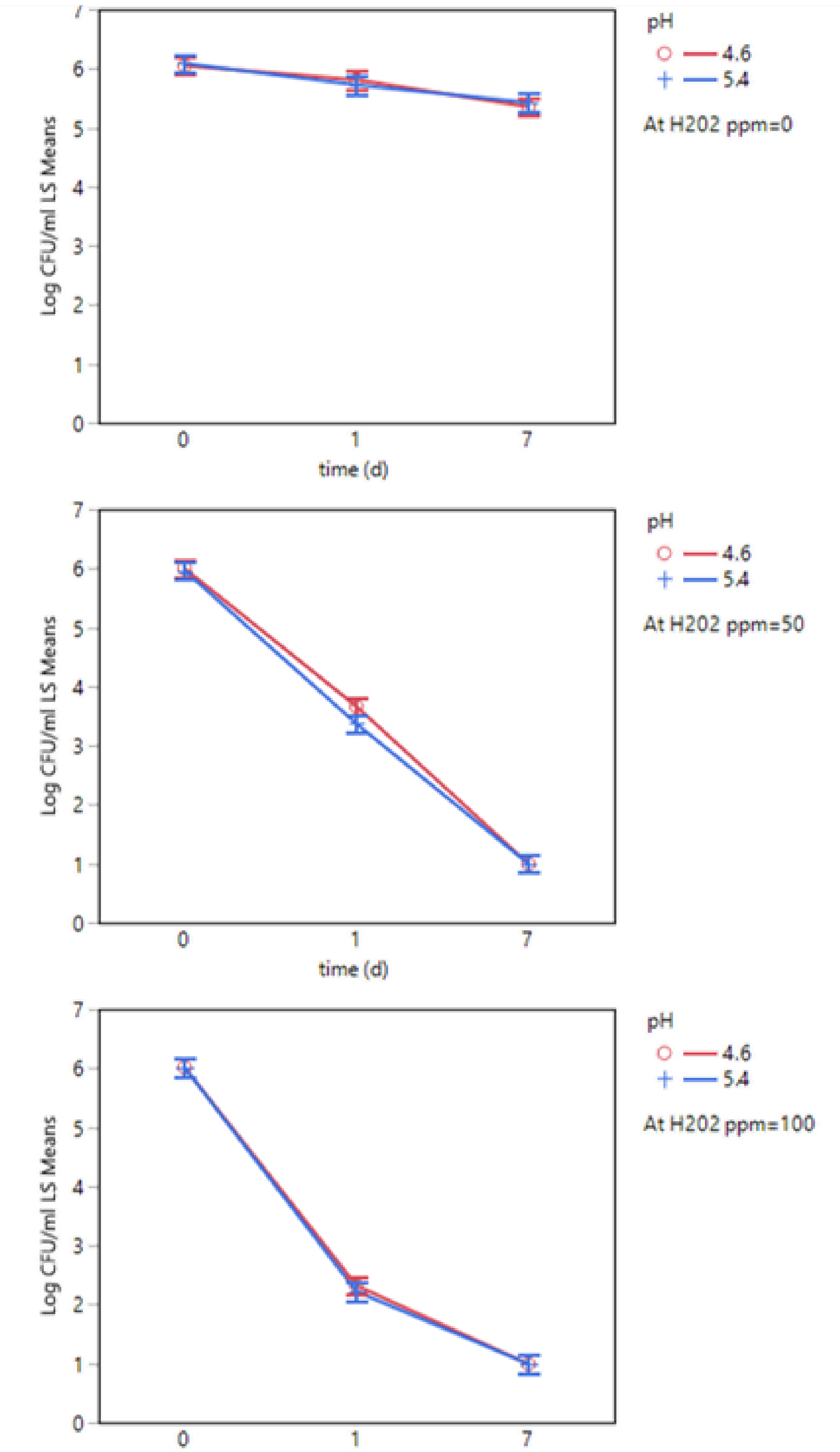


Figure S4. Least Square Means Plots for the effect of salt vs. time for three levels of hydrogen peroxide (Experiment 1, fresh filtered brines) on reduction of *L. monocytogenes*

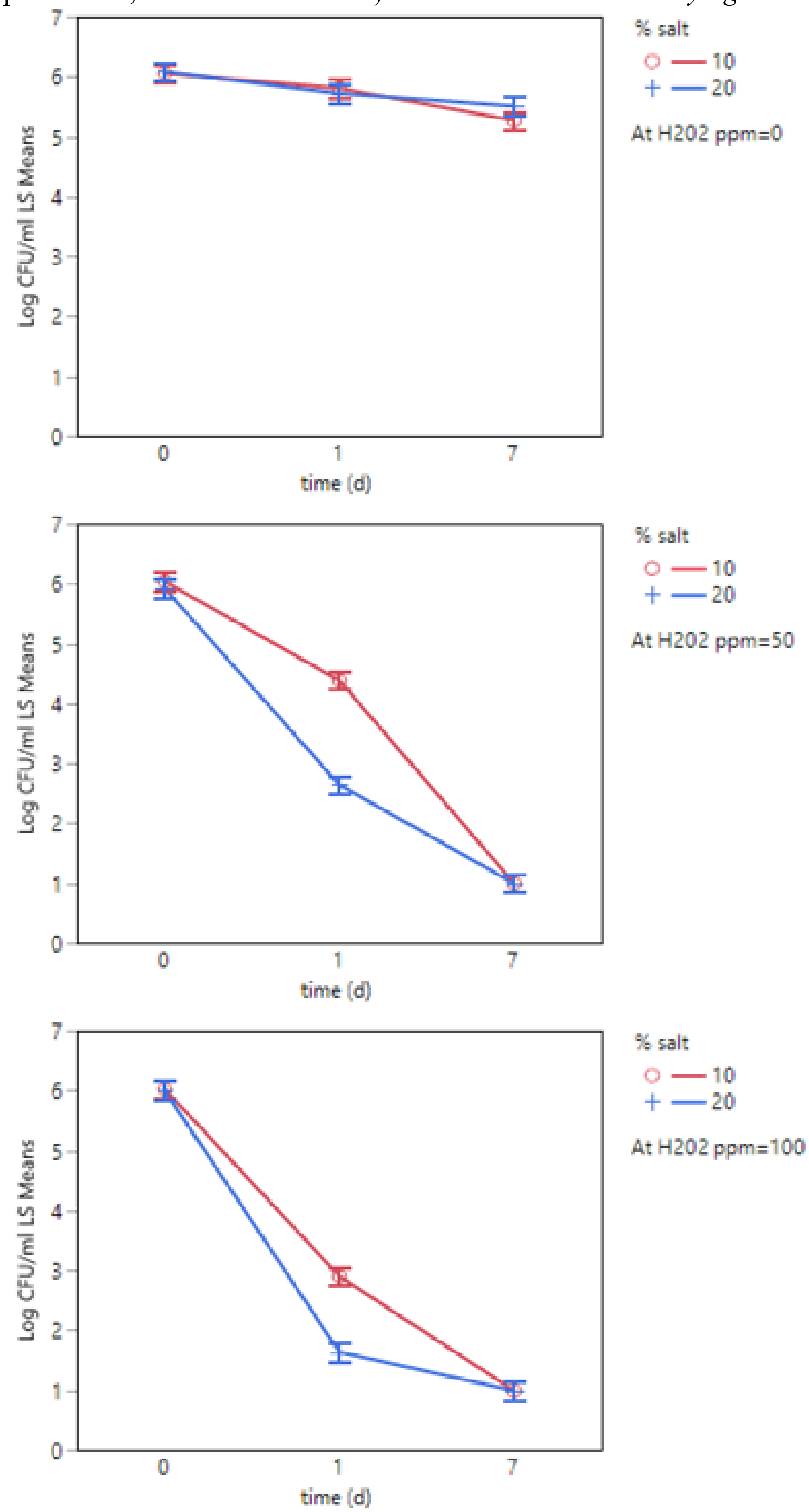


Figure S5. Least Square Means Plots for the effect of temperature vs. time for three levels of hydrogen peroxide (Experiment 1, fresh filtered brines)

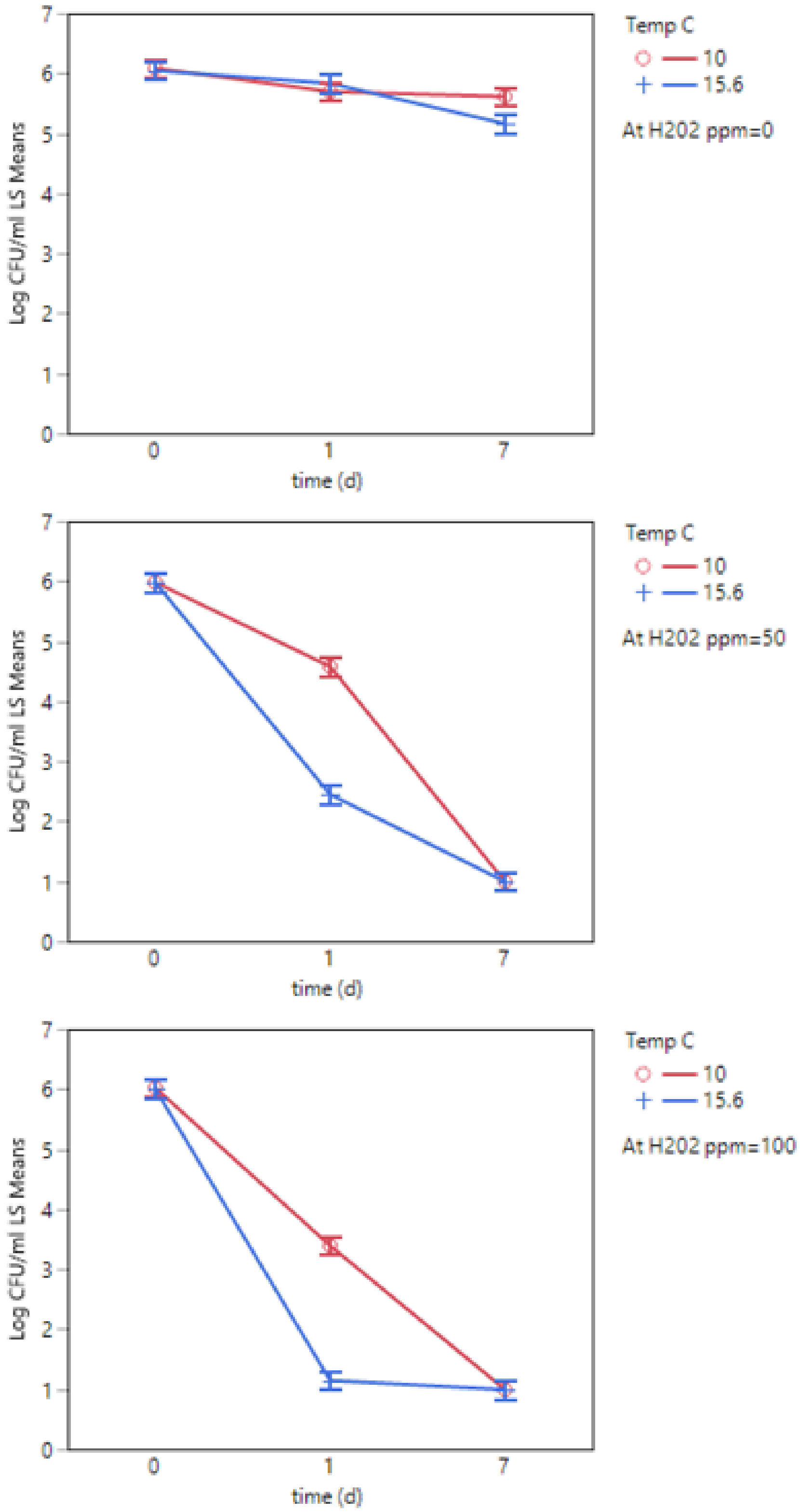
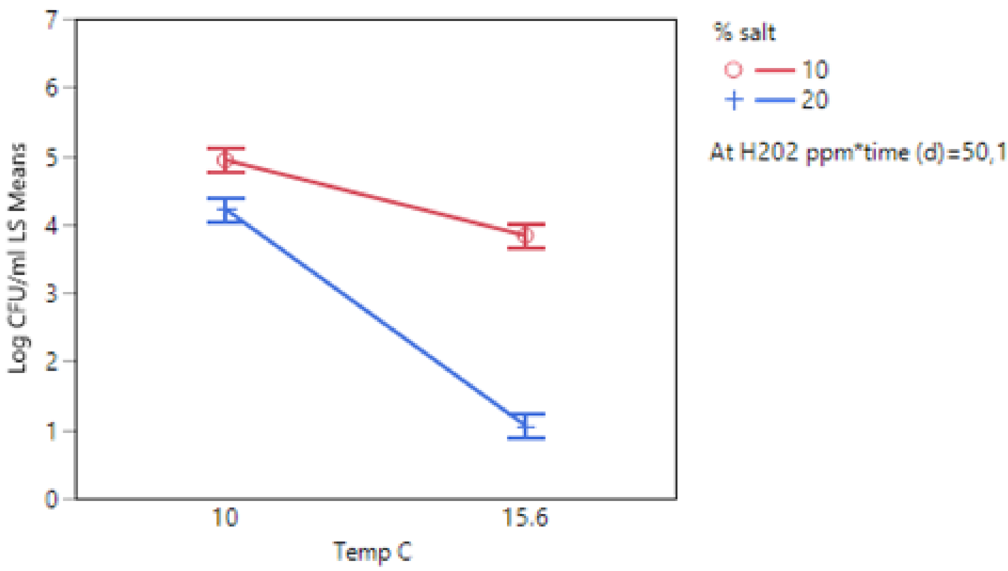


Figure S6. Least Square Means Plots for the effect of temperature vs. salt for two levels of hydrogen peroxide (50, 100 ppm) at day 1 (Experiment 1, fresh filtered brines); no significant difference in treatments at day 0 7 or in treatments without hydrogen peroxide.



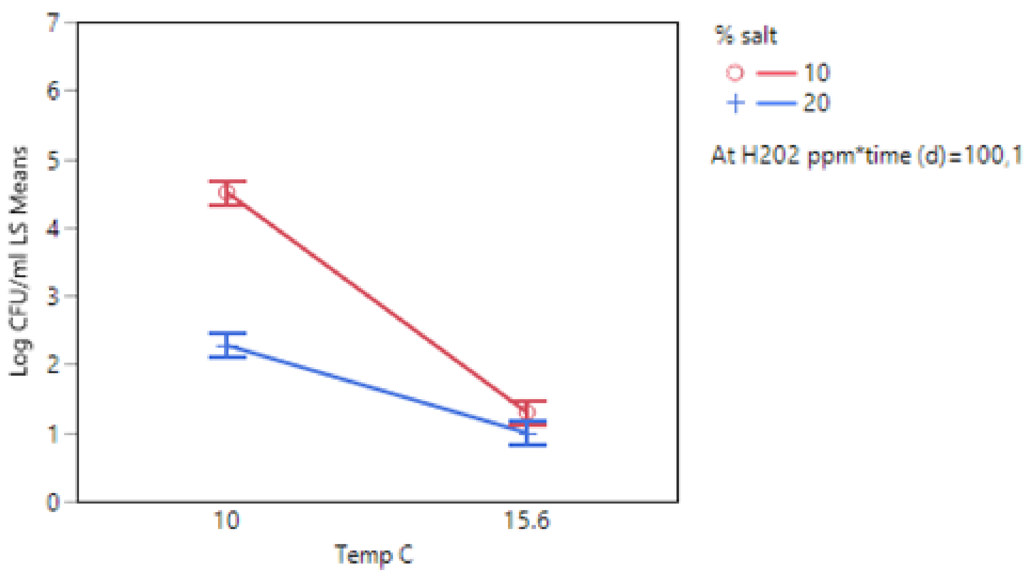


Figure S7. Examples of color and turbidity of used commercial brines used for experiment 2.

Figure S8. Least Square Means Plots for the effect of temperature vs. time for three levels of hydrogen peroxide (Experiment 2, used commercial brines)