

TABLES

Table 1. Prevalence of Selected Microorganisms in Broiler Carcass Rinse Fluids

Microorganism	Samples Analyzed	Samples Positive		SE ¹
		Number Positive	Percent Positive	
INDICATOR ORGANISMS				
Aerobic Plate Count @ 35°C	1297	1297	100.0	NA ²
Total Coliforms	1297	1296	99.9	0.1
<i>Escherichia coli</i> (Biotype I)	1297	1292	99.6	0.2
PATHOGENIC ORGANISMS				
<i>Clostridium perfringens</i>	1297	557	42.9	1.4
<i>Staphylococcus aureus</i>	1297	830	64.0	1.3
<i>Listeria monocytogenes</i>	1297	194	15.0	1.0
<i>Campylobacter jejuni/coli</i>	1297	1144	88.2	0.9
<i>Escherichia coli</i> O157:H7	1297	0	NA ²	NA ²
<i>Salmonella</i>	1297	260	20.0	1.1

¹ Standard Error using the binomial distribution.

² NA= Not applicable

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 2. Mean Level of Selected Microorganisms (per ml) in Broiler Carcass Rinse Fluids

Microorganism	Number of Samples Quantified	Number of Samples Positive ¹	Level of Positives, per ml			
			Log ₁₀ Mean		Geometric Mean	
			Mean ²	SE ³	Mean ²	95% CI ⁴
INDICATOR ORGANISMS						
Aerobic Plate Count @ 35°C	1297	1297	3.28	0.02	1912	1785, 2048
Total Coliforms	1297	1296	1.78	0.02	60	56, 64
<i>Escherichia coli</i> (Biotype I)	1297	1292	1.51	0.02	32	30, 35
PATHOGENIC ORGANISMS						
<i>Clostridium perfringens</i>	1297	557	0.86	0.03	7.2	6.4, 8.1
<i>Staphylococcus aureus</i>	1297	830	1.12	0.03	13	12, 15
<i>Listeria monocytogenes</i>	193 ^{5,6}	94	-0.89	0.06	0.13	0.10, 0.17
<i>Campylobacter jejuni/coli</i>	1297	1144	1.33	0.03	21	19, 25
<i>Escherichia coli</i> O157:H7	0 ⁵	NA ⁷	NA ⁷	NA ⁷	NA ⁷	NA ⁷
<i>Salmonella</i>	260 ⁵	151	-0.79	0.06	0.16	0.12, 0.21

¹ Positive by quantitative method.

² Level only of those samples found positive by quantitative method.

³ Standard error of the mean of positive samples.

⁴ Confidence Interval.

⁵ Only those samples found positive by the qualitative method were quantified.

⁶ One sample positive by the qualitative method was unable to be enumerated due to insufficient reserve fluid.

⁷ NA = not applicable.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 2a. Mean Level of Selected Microorganisms (per cm²) Calculated from Broiler Carcass Rinse Fluids

Microorganism	Number of Samples Quantified	Number of Samples Positive ¹	Level of Positives, per cm ²			
			Log ₁₀ Mean		Geometric Mean	
			Mean ²	SE ³	Mean ²	95% CI ⁴
INDICATOR ORGANISMS						
Aerobic Plate Count @ 35°C	1297	1297	2.60	0.02	396	370, 424
Total Coliforms	1297	1296	1.09	0.02	12	12, 13
<i>Escherichia coli</i> (Biotype I)	1297	1292	0.82	0.02	6.7	6.2, 7.2
PATHOGENIC ORGANISMS						
<i>Clostridium perfringens</i>	1297	557	0.16	0.03	1.5	1.3, 1.6
<i>Staphylococcus aureus</i>	1297	830	0.43	0.03	2.7	2.4, 3.0
<i>Listeria monocytogenes</i>	193 ^{5,6}	94	-1.60	0.06	0.025	0.019, 0.033
<i>Campylobacter jejuni/coli</i>	1297	1144	0.64	0.03	4.4	3.8, 5.1
<i>Escherichia coli</i> O157:H7	0 ⁵	NA ⁷	NA ⁷	NA ⁷	NA ⁷	NA ⁷
<i>Salmonella</i>	260 ⁵	151	-1.49	0.06	0.033	0.025, 0.043

¹ Positive by quantitative method.

² Level only of those samples found positive by quantitative method.

³ Standard error of the mean of positive samples.

⁴ Confidence Interval.

⁵ Only those samples found positive by the qualitative method were quantified.

⁶ One sample positive by the qualitative method was unable to be enumerated due to insufficient reserve fluid.

⁷ NA = not applicable.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 3. Aerobic Plate Count @ 35°C Distribution (per ml) in Broiler Carcass Rinse Fluids

Range, cfu/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	0	0.0	0	0.0
1 - 10	0	0.0	0	0.0
11 - 100	7	0.5	7	0.5
101 - 1,000	419	32.3	426	32.8
1,001 - 10,000	764	58.9	1190	91.8
10,001 - 100,000	101	7.8	1291	99.5
100,001 - 1,000,000	6	0.5	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Table 3a. Aerobic Plate Count @ 35°C Distribution (per cm²) Calculated from Broiler Carcass Rinse Fluids

Range, cfu/cm²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	0	0.0	0	0.0
1 - 10	0	0.0	0	0.0
10.01 - 100	153	11.8	153	11.8
100.01 - 1,000	870	67.1	1023	78.9
1,000.01 - 10,000	260	20.0	1283	98.9
10,000.01 - 100,000	13	1.0	1296	99.9
100,000.01 - 1,000,000	1	0.1	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 4. Total Coliform Distribution (per ml) in Broiler Carcass Rinse Fluids

Range, cfu/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	1	0.1	1	0.1
1 - 10	84	6.5	85	6.6
11 - 100	862	66.5	947	73.0
101 - 1,000	316	24.4	1263	97.4
1,001 - 10,000	29	2.2	1292	99.6
10,001 - 100,000	4	0.3	1296	99.9
100,001 - 1,000,000	1	0.1	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Table 4a. Total Coliform Distribution (per cm²) Calculated from Broiler Carcass Rinse Fluids

Range, cfu/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	1	0.1	1	0.1
0.01 - 1	17	1.3	18	1.4
1.01 - 10	573	44.2	591	45.6
10.01 - 100	637	49.1	1228	94.7
100.01 - 1,000	59	4.5	1287	99.2
1,000.01 - 10,000	8	0.6	1295	99.8
10,000.01 - 100,000	2	0.2	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 5 . *Escherichia coli* (Biotype I) Distribution (per ml) in Broiler Carcass Rinse Fluids

Range, cfu/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	5	0.4	5	0.4
1 - 10	255	19.7	260	20.0
11 - 100	842	64.9	1102	85.0
101 - 1,000	169	13.0	1271	98.0
1,001 - 10,000	22	1.7	1293	99.7
10,001 - 100,000	3	0.2	1296	99.9
100,001 - 1,000,000	1	0.1	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Table 5a . *Escherichia coli* (Biotype I) Distribution (per cm²) Calculated from Broiler Carcass Rinse Fluids

Range, cfu/cm²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	5	0.4	5	0.4
0.01 - 1	75	5.8	80	6.2
1.01 - 10	797	61.4	877	67.6
10.01 - 100	376	29.0	1253	96.6
100.01 - 1,000	36	2.8	1289	99.4
1,000.01 - 10,000	6	0.5	1295	99.8
10,000.01 - 100,000	2	0.2	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 6. *Clostridium perfringens* Distribution (per ml) in Broiler Carcass Rinse Fluids

Range, cfu/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	740	57.1	740	57.1
1 - 10	345	26.6	1085	83.7
11 - 100	187	14.4	1272	98.1
101 - 1,000 ²	25	1.9	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

² Maximum level detected = 870 cfu/ml

Table 6a. *Clostridium perfringens* Distribution (per cm²) Calculated from Broiler Carcass Rinse Fluids

Range, cfu/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	740	57.1	740	57.1
0.01 - 1	244	18.8	984	75.9
1.01 - 10	251	19.4	1235	95.2
10.01 - 100	58	4.5	1293	99.7
100.01 - 1,000 ²	4	0.3	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

² Maximum level detected = 284 cfu/cm²

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 7. *Staphylococcus aureus* Distribution (per ml) in Broiler Carcass Rinse Fluids

Range, cfu/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<1 ¹	467	36.0	467	36.0
1 - 10	405	31.2	872	67.2
11 - 100	324	25.0	1196	92.2
101 - 1,000	83	6.4	1279	98.6
1,001 - 10,000 ²	18	1.4	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

² Maximum level detected = 3600 cfu/ml

Table 7a. *Staphylococcus aureus* Distribution (per cm²) Calculated from Broiler Carcass Rinse Fluids

Range, cfu/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	467	36.0	467	36.0
0.01 - 1	259	20.0	726	56.0
1.01 - 10	403	31.1	1129	87.0
10.01 - 100	139	10.7	1268	97.8
100.01 - 1,000 ²	29	2.2	1297	100.0
TOTAL	1297	100.0		

¹ Negative by method.

² Maximum level detected = 676 cfu/cm²

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 8. *Listeria monocytogenes* Distribution (per ml) in Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<.03 ¹	99	51.3	99	51.3
0.03 - 0.30	80	41.5	179	92.7
0.301 - 3.0	11	5.7	190	98.4
3.01 - 30.0	2	1.0	192	99.5
>30.0 ²	1	0.5	193	100.0
TOTAL	193	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 241 MPN/ml.

Table 8a. *Listeria monocytogenes* Distribution (per cm²) Calculated from Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	99	51.3	99	51.3
0.01 - 0.03	65	33.7	164	85.0
0.0301 - 0.30	24	12.4	188	97.4
0.3001 - 3.0	4	2.1	192	99.5
3.001 - 30.0	0	0.0	192	99.5
>30.0 ²	1	0.5	193	100.0
TOTAL	193	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 51 MPN/cm²

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 9. *Campylobacter jejuni/coli* Distribution (per ml) in Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<0.03 ¹	153	11.8	153	11.8
0.03 - 0.30	75	5.8	228	17.6
0.301 - 3.0	145	11.2	373	28.8
3.01 - 30.0	422	32.5	795	61.3
>30.0 ²	502	38.7	1297	100.0
TOTAL	1297	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 230,000 MPN/ml

Table 9a. *Campylobacter jejuni/coli* Distribution (per cm²) Calculated from Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	153	11.8	153	11.8
0.01 - 0.03	36	2.8	189	14.6
0.0301 - 0.30	111	8.6	300	23.1
0.3001 - 3.0	285	22.0	585	45.1
3.001 - 30.0	483	37.2	1068	82.3
>30.0 ²	229	17.7	1297	100.0
TOTAL	1297	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 34,237 MPN/cm²

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 10. *Salmonella* Distribution (per ml) in Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/ml	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
<0.03 ¹	109	41.9	109	41.9
0.030 - 0.30	118	45.4	227	87.3
0.301 - 3.0	24	9.2	251	96.5
3.01 - 30.0	6	2.3	257	98.8
>30.0 ²	3	1.2	260	100.0
TOTAL	260	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 280 MPN/ml

Table 10a. *Salmonella* Distribution (per cm²) Calculated from Enumerated Positive Broiler Carcass Rinse Fluids

Range, MPN/cm ²	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
0 ¹	109	41.9	109	41.9
0.01 - 0.03	91	35.0	200	76.9
0.0301 - 0.30	48	18.5	248	95.4
0.3001 - 3.0	6	2.3	254	97.7
3.001 - 30.0	4	1.5	258	99.2
>30.0 ²	2	0.8	260	100.0
TOTAL	260	100.0		

¹ Negative by quantitative MPN method.

² Maximum level detected = 66 MPN/cm²

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).

Table 11. Number of Broiler Carcass Rinse Fluids Containing One or More Species of Identified Pathogenic Bacteria

Number of Pathogens ¹	Number of Samples	Cumulative Number of Samples	Cumulative Percent
0 ²	28	28	2.2
1	257	285	22.0
2	498	783	60.4
3	343	1126	86.8
4	152	1278	98.5
5	19	1297	100.0
6	0	1297	100.0

¹ *C. perfringens*, *S. aureus*, *L. monocytogenes*, *C. jejuni/coli*, *E. coli* O157:H7, *Salmonella* spp.

² Negative by method.

Source: Nationwide Broiler Chicken Microbiological Baseline Data Collection Program (July 1994 - June 1995).