

CERTIFICATION

AOAC Research Institute Performance Tested MethodsSM

Certificate No.

090203C

The AOAC Research Institute hereby certifies the method known as:

PATHATRIX Pooling System for Salmonella species

manufactured by

Life Technologies part of Thermo Fisher Scientific
Wade Road
Basingstoke, Hampshire
RG24 8PW, United Kingdom

This method has been evaluated and certified according to the policies and procedures of the AOAC *Performance Tested Methods*SM Program. This certificate indicates an AOAC Research Institute Certification Mark License Agreement has been executed which authorizes the manufacturer to display the AOAC Research Institute *Performance Tested Methods* SM certification mark on the above-mentioned method for the period below. Renewal may be granted by the Expiration Date under the rules stated in the licensing agreement.

Bradley A. Stawick, Senior Director Signature for AOAC Research Institute Issue Date
Expiration Date

November 02, 2024 December 31, 2025 AUTHORS
ORIGINAL VALIDATION: Adrian Parton & Michael Scott
MODIFICATION 2005: Adrian Parton and Michael Scott
MODIFICATION DECEMBER 2012: Kathy Latham

MODIFICATION OCTOBER 2015: V. Zepnickaite, A. Markina, & S.

Mantipragad

Matrix MicroScience Ltd. Lynx Business Park Fordham Road

SUBMITTING COMPANY

Cambridgeshire, CB8 7NY
United Kingdom

CURRENT SPONSOR
Life Technologies part of Thermo
Fisher Scientific
Wade Road
Basingstoke, Hampshire

RG24 8PW, United Kingdom

METHOD NAME

PATHATRIX Pooling System for Salmonella species

CATALOG NUMBERS

APS50, APS250P, APS500P, 4403930, PATHATRIXAUTO

INDEPENDENT LABORATORY

Original Validation: Campden & Chorleywood Food Research Association Chipping Campden

Gloucestershire, GL55 6LD United Kingdom

APPLICABILITY OF METHOD

Target organism - Salmonella species.

Matrixes – (25 g) – pasteurized liquid egg, raw ground beef, cooked sliced ham, milk powder, orange juice, black ground pepper, chocolate, soft cheese, produce, raw fish, lasagna (ready meal)

MODIFICATION 2005 – (25 g) – cooked ham, raw whole egg, chocolate, milk powder, frozen prawns

Performance claims – PATHATRIX allows the detection and isolation of Salmonella species from a range of foods at low levels (1-10cfu/25g).

REFERENCE METHODS

USDA/FSIS Microbiology Laboratory Guidebook 3rd Edition 1998 (Revision # 1; 9-6-99) (3)

BAM Bacteriological Analytical Manual 8th Edition 1998 (4)

U.S. Food & Drugs Administration. 2003. Bacteriological Analytical Manual (online) (8)

ORIGINAL CERTIFICATION DATE

September 02, 2002

CERTIFICATION RENEWAL RECORD

Renewed annually through December 2025.

METHOD MODIFICATION RECORD

1. June 2005

2. December 2012 Level 2

3. May 2013 Level 2

4. October 2015 Level 2

5. December 2017 Level 1

6. December 2022 Level 1

7. January 2024 Level 1

SUMMARY OF MODIFICATION

1. Addition of pooling samples.

Kit acquired by Life Technologies. Manufacturing location change from Newmarket, UK to Austin, TX.

 MicroSEQ® Salmonella spp. Linked to PTM 090203C Pathatrix® Pooling System Salmonella spp. Kit for fresh diced tomatoes, chocolate, and deli ham.

 Manufacturing location change from Austin, TX to Vilnius, Lithuania.

5. Editorial/clerical changes.

6. Editorial/clerical changes.

7. Editorial/clerical changes.

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NONE

PRINCIPLE OF THE METHOD (1)

The PATHATRIX Salmonella Test System is a novel patented method that comprises of a pre-programmed workstation and a consumable pack and employs magnetic beads coated with antibodies specific to the target organism, which for this test was Salmonella. The whole food sample is homogenised in a non-selective enrichment medium (Buffered Peptone Water) in a sterile stomacher bag (that may or may not containing a mesh liner according to manufacturers guidelines – see protocol). The stomacher bag is then incubated overnight at 37°C. After Incubation the bag is then placed on the PATHATRIX in a thermally controlled pot at 37°C and magnetic beads, coated with antibodies to Salmonella, are added to the sample homogenate. The consumable pack is then loaded into the PATHATRIX, and the pre-programmed run started. The liquid sample is then continuously re-circulated over the phase from the bag by a peristaltic pump via tubing (Figure 1). Within this closed loop system is a plastic phase that incorporates a sloped face, which becomes magnetised and captures the beads onto the face's surface as they pass.

After continuously circulating the sample around the system and through the phase for 30 minutes, the target organisms are bound to the magnetic beads on the phase. Any residue and food debris are removed from the phase by a subsequent wash step. The beads from the capture phase are then eluted into a wash vessel and concentrated using a magnetic rack.

After completion of the capture step the sample can then be directly plated, by streaking, onto XLD, Brilliant Green and Hektoin agar plates, which are incubated at 37°C overnight in an incubator.

DISCUSSION OF THE VALIDATION STUDY (1)

It is clear from the data presented in the Internal and External validation studies that the PATHATRIX system is at least equivalent to the USDA /BAM methods for the detection Salmonella in a range of different food matrixes.

The PATHATRIX system is fundamentally different from other detection systems in that the entire 250ml sample is actually analysed rather than looking at 1ml (or less) fractions of enrichment cultures, that other methods rely on. Therefore, a greater degree of sensitivity is achieved, which enables the effective use of non-selective enrichment broths that do not inhibit growth in any way.

The agar plates showed a significant reduction in the number of background contamination by comparison to other methods (with the exception of raw ground chicken). This produced clearer isolated colonies that enable more accurate reading and ease of confirmation of *Salmonella* organisms.

An additional benefit of the PATHATRIX system is speed. Presumptive results i.e. "typical" colonies on a plate can be achieved in as little as 18 hours from plating and if serological tests are used e.g. agglutination, results can be confirmed within 40 hours of commencement of the test. This represents a significant improvement by comparison to the USDA FSIS and FDA-BAM methods and other methods which typically require 72 hours or more to obtain a presumptive result. Other considerations are "ease of use" of methods and here again the PATHATRIX system has been shown in external validation studies to be significantly easier to use involving less manipulation by the operator and a lower skill level to operate the test. Clearly these factors are highly significant to the laboratories that conduct *Salmonella* testing. The pre-programmed nature of the PATHATRIX instrument removes areas of concern relating to operator error and therefore makes the instrument more robust to use than by comparison to conventional methods which require a greater degree of "skill"/ "operator technique".

Table 15.2.2.1: Results of Inclusivity Study for PATHATRIX (1)							
Number	Organism	CCFRA code	O-antigen group	Source/Strain			
1	Salmonella arizonae	1571	51	NCTC 8297			
2	Salmonella Treforest	1413	51	NCTC 10075			
3	Salmonella Utrecht	1417	52	NCTC 10077			
4	Salmonella Uccle	1416	54	NCTC 10251			
5	Salmonella Tranaroa	1412	55	NCTC 10252			
6	Salmonella Locarno	1386	57	NCTC 10272			
7	Salmonella Basel	1292	58	NCTC 10310			
8	Salmonella Abony	11632	В	NCTC 6017			
9	Salmonella California	1319	В	NCTC 6018			
10	Salmonella Derby	1352	В	NCTC 5721			
11	Salmonella Essen	1370	В	NCTC 5723			
12	Salmonella Altendorf	1278	В	NCTC 10546			
13	Salmonella Cairo	1318	В	NCTC 8274			
14	Salmonella Typhimurium	1974	В	ATCC 13311 NCTC 74			
15	Salmonella Typhimurium	11634	В	ATCC 14028			
16	Salmonella Schwarzengrund	1408	В	NCTC 6756			
17	Salmonella Sandiego	1407	В	NCTC 6024			
18	Salmonella Reading	1405	В	NCTC 5720			
19	Salmonella Chester	1329	В	NCTC 5718			
20	Salmonella Budapest	1314	В	NCTC 5724			
21	Salmonella Banana	1289	В	NCTC 8718			
22	Salmonella Ball	1288	В	NCTC 9870			
23	Salmonella Java	1378	В	NCTC 5706			
24	Salmonella Bareilly	1291	C ₁	NCTC 5745			
25	Salmonella Oranienbury	1402	C ₁	NCTC 5743			
26	Salmonella Birkenhead	1297	C ₁	NCTC 7744			
27	Salmonella Tennessee	1411	C ₁	NCTC 6388			
28	Salmonella Norwich	1401	C ₁	NCTC 7077			
29	Salmonella Menden	9279	C ₁	ATCC 15992			
30	Salmonella Hartford	1375	C ₁	NCTC 6802			
31	Salmonella Eschweiler	1369	C ₁	NCTC 8442			
32	Salmonella Edinburgh	1364	C ₁	NCTC 7407			
33	Salmonella Denver	1351	C ₁	NCTC 8445			
34	Salmonella Amersfoort	1280	C ₁	NCTC 5749			
35	Salmonella Livingstone	1385	C ₁	NCTC 9125			

37 Solmonella Austin 1286	26		1200		11070.0110
38 Salmonella Fayed		Salmonella Jerusalem	1380	<u>C₁</u>	NCTC 8146
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40 Salmonella Brovis-morbificans 1313 C2 NCTC 9706 41 Salmonella Brovis-morbificans 1306 C2 NCTC 5736 42 Salmonella Brovis-morbificans 1304 C3 NCTC 6382 43 Salmonella Banalia 1290 C2 NCTC 6382 44 Salmonella Banalia 1290 C2 NCTC 6382 45 Salmonella Mameristana 1281 C3 NCTC 6382 45 Salmonella Dublin 1356 D1 NCTC 9368 46 Salmonella Miami 1393 D1 NCTC 9368 47 Salmonella Miami 1393 D1 NCTC 9368 48 Salmonella Javiana 1379 D1 NCTC 6382 49 Salmonella Javiana 1379 D1 NCTC 6398 49 Salmonella Gallinarum 15831 D1 NCTC 6398 50 Salmonella Gallinarum 15832 D1 NCTC 1057 51 Salmonella Gallinarum 15832 D1 NCTC 1077 53 Salmonella Gallinarum 15832 D1 NCTC 1077 53 Salmonella Gallinarum 15832 D1 NCTC 1077 54 Salmonella Gallinarum 15832 D1 NCTC 1077 55 Salmonella Muenster 1374 E1 NCTC 5786 55 Salmonella Muenster 1397 E1 NCTC 5786 55 Salmonella Muenster 1397 E1 NCTC 5787 57 Salmonella Muenster 1397 E1 NCTC 5787 57 Salmonella Gallinarum 1387 E1 NCTC 5787 58 Salmonella Gallinarum 1387 E1 NCTC 5787 57 Salmonella Gallinarum 1387 E1 NCTC 5787 58 Salmonella Gallinarum 1387 E1 NCTC 5787 59 Salmonella Gallinarum 1387 E1 NCTC 5787 50 Salmonella Gallinarum 1387 E1 NCTC 5787 51 Salmonella Gallinarum 1387 E1 NCTC 5787 52 Salmonella Gallinarum 1387 E1 NCTC 5787 53 Salmonella Gallinarum 1387 E1 NCTC 5787 54 Salmonella Gallinarum 1387 E1 NCTC 5787 55 Salmonella Gallinarum 1387 E1 NCTC 5787 56 Salmonella Gallinarum 1387 E1 NCTC 5787 57 Salmonella Gallinarum 1387 E1 NCTC 5787 58 Salmonella Gallinarum 1387 E1 NCTC 5787 59 Salmonella Gallinarum 1388 E1 NCTC 5787 60 Salmonella Gallinarum 1388 E1 NCTC 5787 61 Salmone		·			
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49 Salmonella Canastel 1321 D1 NCTC 6948					
Solmonella Antarctica 1282 D1 NCTC 1134					
51 Salmonella Gallinarum 15831 D1 NCTC 1075 52 Salmonella Pullorum 15832 D3 NCTC 1076 53 Salmonella Give 1374 E1 NCTC 5776 54 Salmonella Muenster 1397 E1 NCTC 5780 55 Salmonella Amager 1279 E1 NCTC 5780 55 Salmonella London 1387 E1 NCTC 5770 57 Salmonella Undon 1387 E1 NCTC 6015 58 Salmonella Usanda 5109 E1 NCTC 6015 58 Salmonella Lexington 5110 E1 NCTC 6024 60 Salmonella Lexington 5110 E1 NCTC 6023 61 Salmonella Bustantan 1316 E1 NCTC 8062 62 Salmonella Bustantan 1316 E1 NCTC 8364 63 Salmonella Cerkenwell 1333 E1 NCTC 8246 64 Salmonella Cambridge 1320 E2 NCTC 8246					
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79 Salmonella Caracus 1323 H NCTC 8715 80 Salmonella Brazil 1309 I NCTC 8446 81 Salmonella Carmel 1324 J NCTC 9872 82 Salmonella Minnesota 1394 L NCTC 5800 83 Salmonella Pomona 1403 M NCTC 6589 84 Salmonella Ezra 1371 M NCTC 9917 85 Salmonella Urbana 1414 N NCTC 9917 86 Salmonella Adelaide 9766 O ATCC 1071 87 Salmonella Alachua 1274 O NCTC 8261 88 Salmonella Ealing 5449 O NCTC 1194 89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Bulawayo 1315 R NCTC 9948 94			1410	Н	NCTC 6758
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81 Salmonella Carmel 1324 J NCTC 9872 82 Salmonella Minnesota 1394 L NCTC 5800 83 Salmonella Pomona 1403 M NCTC 6580 84 Salmonella Ezra 1371 M NCTC 9917 85 Salmonella Urbana 1414 N NCTC 9917 86 Salmonella Adelaide 9766 O ATCC 1071 87 Salmonella Alachua 1274 O NCTC 8261 88 Salmonella Ealing 5449 O NCTC 1194 89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Berkeley 1295 U NCTC 8260	79	Salmonella Caracus	1323	Н	NCTC 8715
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86 Salmonella Adelaide 9766 O ATCC 1071 87 Salmonella Alachua 1274 O NCTC 8261 88 Salmonella Ealing 5449 O NCTC 1194 89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	84	Salmonella Ezra	1371	M	NCTC 9917
87 Salmonella Alachua 1274 O NCTC 8261 88 Salmonella Ealing 5449 O NCTC 1194 89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260			1414	N	NCTC 6248
88 Salmonella Ealing 5449 O NCTC 1194 89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	86	Salmonella Adelaide	9766	0	ATCC 10718
89 Salmonella Inverness 9274 P ATCC 1072 90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	87	Salmonella Alachua	1274	0	NCTC 8261
90 Salmonella Emmastad 1368 P NCTC 9921 91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	88	Salmonella Ealing	5449	0	NCTC 11948
91 Salmonella Allandale 1277 R NCTC 7898 92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	89	Salmonella Inverness	9274	Р	ATCC 10720
92 Salmonella Duval 1361 R NCTC 9875 93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	90	Salmonella Emmastad	1368	Р	NCTC 9921
93 Salmonella Bulawayo 1315 R NCTC 9948 94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	91	Salmonella Allandale	1277	R	NCTC 7898
94 Salmonella Waycross 1885 S NCTC 7401 95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	92	Salmonella Duval	1361	R	NCTC 9875
95 Salmonella Houten 1376 U NCTC 1040 96 Salmonella Berkeley 1295 U NCTC 8260	93	Salmonella Bulawayo	1315	R	NCTC 9948
96 Salmonella Berkeley 1295 U NCTC 8260	94	Salmonella Waycross	1885	S	NCTC 7401
96 Salmonella Berkeley 1295 U NCTC 8260	95	Salmonella Houten	1376	U	NCTC 10401
			1295	U	NCTC 8260
97 Salmonella Clovelly 1335 V NCTC 1043		Salmonella Clovelly	1335	V	NCTC 10436
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		· ·			NCTC 9792
					ATCC 29931
					NCTC 9949
					NCTC 7318

Table 15.2.2.2: Results of Exclusivity Study of the PATHATRIX (1)					
Number	Organism	CCFRA code	Source/Strain Reference		
1	Aeromonas hydrophila	5518	NCTC 8049		
2	Bacillus cereus	4110	ATCC 10876		
3	Bacillus cereus	5502	NCIMB 9373		
4	Bacillus cereus	193	NCIMB 3329		
5	Bacillus subtillis	4112	ATCC 6633		
6	Edwardsiella tarda	8392	NCTC 10391		
7	Enterobacter aerogenes	4108	ATCC 13048		
8	Enterobacter aerogenes	15736	NCTC 10006		
9	Enterococcus faecalis	4113	NCTC 775		
10	Erwinia herbico	7057	NCIMB 11521		
11	Escherichia coli	11017	NCTC 12241		
12	Escherichia coli	11626	NCTC 5933		
13	Lactobacillus gasseri	6804	NCIMB 13081		
14	Lactobacillus plantarum	166	NCTC 6376		
15	Listeria monocytenes	6600	NCTC 11994		
16	Pasteuralla avium	8389	NCTC 11297		
17	Pasteuralla bettii	8391	NCTC 10535		
18	Pseudomonas aeroginosa	8299	NCIMB 10753		
19	Pseudomonas aeroginosa	7834	NCIMB 10548		
20	Pseudomonas fragi	7268	NCTC 10476		
21	Serratia marcescens	130	NCTC 10211		
22	Shigella boydii	324	NCTC 11321		
23	Shigella flexneri	325	NCTC 9950		
24	Shigella sonnei	326	NCTC 10352		
25	Staphylococcus aureus	1216	NCTC 10655/ATCC 19095		
26	Staphylococcus aureus	4105	ATCC 25923		
27	Staphylococcus aureus	11018	NCTC 6571		
28	Streptococcus agalactiae	7115	ATCC 13813		
29	Streptococcus thermophilus	5492	NCIMB 8510		
30	Vibrio mimicus	6351	NCTC 11435		
31	Vibrio parahaemolyticus	15737	NCTC 11344		
32	Yersinia enterocolitica	4103	NCTC 10460		
33	Citrobacter freundii	40	NCTC 9750		
34	Proteus vulgaris	1581	Poultry		

Comparative Study of PATHATRIX to Standard Methods in a Variety of Food Matrixes (1)						
Food Sample	MPN LEVEL	No +ve Samples PATH'X LOW	No +ve Samples CONV LOW	MPN LEVEL	No +ve Samples PATH'X HIGH	No +ve Samples CONV HIGH
Raw Ground Beef	7.5cfu	20	18	20cfu	20	20
Cooked sliced Ham	2.3cfu	18	19	11cfu	20	20
Milk Powder	2.3cfu	12	4	36cfu	20	20
Orange Juice	9.3cfu	19	18	20cfu	20	20
Black Ground Pepper	4.3cfu	17	15	12cfu	20	20
Chocolate	6.1cfu	20	19	46cfu	20	20
Soft Cheese	7.2cfu	20	19	27cfu	20	20
Carrots	1.1cfu	19	16	36cfu	20	20
Raw Fish	7.5cfu	20	18	20cfu	20	20
Lasagne Ready Meal	4.3cfu	20	19	46cfu	20	20

DISCUSSION OF THE MODIFICATION STUDY 2005 (9)

It is clear from the data presented in the Internal validation studies that the PATHATRIX Salmonella spp Pooling system represents a valid method for the detection Salmonella in a range of food matrixes.

The PATHATRIX system is fundamentally different from other detection systems in that the entire 250ml sample is analysed rather than looking at 1ml (or less) fractions of enrichment cultures, that other methods typically rely on. Thus with the Pathatrix pooling approach where 1/5th (50ml) of the standard Pathatrix sample size (250ml) is taken the sensitivity of the assay is not compromised. The 50ml sub-sample still represents a sample size that is typically between 50 & 5,000 times larger than other assay systems.

The selective media plates showed a reduction in the number of background contamination by comparison to other methods. This produced clearer isolated colonies that enable more accurate reading and ease of confirmation of *Salmonella* organisms.

An additional benefit of the PATHATRIX system is speed. Presumptive results i.e. "typical" colonies on a plate can be achieved in as little as 20 hours (after plating) and if serological tests are used e.g. agglutination, results can be confirmed within 40 hours of commencement of the test. This represents a significant improvement by comparison to the FDA BAM method and other methods which typically require 72 hours or more to obtain a presumptive result.

Other considerations are "ease of use" of methods and here again the PATHATRIX Pooling system has been shown in external validation studies to be significantly easier to use involving less manipulation by the operator and a lower skill level to operate the test. Clearly these factors are highly significant to the laboratories that conduct Salmonella testing and could lead to more widespread testing in the industry as the tests become more accessible and significantly less expensive than current methods.

The pre-programmed nature of the PATHATRIX instrument removes areas of concern relating to operator error and therefore makes the instrument more robust to use than by comparison to conventional methods which require a greater degree of "skill"/ "operator technique".

Modification of pooling samples 2005 (9)							
Sample Type		MPN Inoculum Level/25g	No +ve Pooled Samples	No +ve Individual Samples	No –ve Individual Samples		
Cooked Ham	Pathatrix	1.5cfu	10	10	40		
Cooked Ham	FDA/BAM	1.5cfu	10	10	40		
Milk Powder	Pathatrix	3.8cfu	10	10	40		
Milk Powder	FDA/BAM	3.8cfu	10	10	40		
Raw whole Egg	Pathatrix	1.5cfu	10	10	40		
Raw whole Egg	FDA/BAM	1.5cfu	10	10	40		
Chocolate	Pathatrix	3.8cfu	10	10	40		
Chocolate	FDA/BAM	3.8cfu	10	10	40		
Frozen prawns	Pathatrix	4.3cfu	10	10	40		
Frozen prawns	FDA/BAM	4.3cfu	10	10	40		

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