

MICROBIOLOGICAL QUALITY OF
READY-TO-EAT FOODS

ACT HEALTH PROTECTION SERVICE



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BACKGROUND/OBJECTIVE

Ready-to-Eat (RTE) food is food that is ordinarily consumed in the same condition in which it is sold or distributed and does not include nuts in the shell and whole, raw fruits and vegetables that are intended for hulling, peeling or washing by the consumers.

Sandwiches, rolls, stir-fries, baked goods as well as various other RTE foods are widely available in the Australian Capital Territory (ACT) with approximately 250 different licensed outlets. Due to the diverse nature and popularity of these foods it was considered prudent to perform ongoing surveys on these products. The survey of RTE products was undertaken for three main reasons:

1. To determine the bacteriological status of ready-to-eat food products available on the ACT market.
2. To determine the compliance of these products to Food Standards Australia New Zealand (FSANZ) Guidelines for the Microbiological Examination of Ready-to-Eat (RTE) Foods 2001 (FSANZ RTE Guidelines).
3. To complement and focus audits of high-risk food producing establishments.

STANDARDS

The FSANZ RTE Guidelines identify four categories of microbiological quality ranging from satisfactory to potentially hazardous. Table 1 details the recommended guidelines. Table 1 not only reflects both the high level of microbiological quality that is achievable for RTE foods in Australia and New Zealand but also indicates the level of contamination that is considered to be a significant risk to public health.

Table 1

Test	Microbiological Quality (colony forming units per gram(cfu/g))			
	Satisfactory (S)	Marginal (M)	Unsatisfactory (U)	Potentially Hazardous (PH)
Standard Plate Count (SPC)				
Level 1*	<10 ⁴	<10 ⁵	≥10 ⁵	
Level 2*	<10 ⁶	<10 ⁷	≥10 ⁷	
Level 3*	N/A	N/A	N/A	
Indicators				
<i>Escherichia coli (E.coli)</i>	<3	3-100	>100	**
Pathogens				
Coagulase positive staphylococci (<i>Staph</i>)	<10 ²	10 ² -10 ³	10 ³ -10 ⁴	≥10 ⁴ SET +ve
<i>Bacillus cereus (B.cerues)</i>	<10 ²	10 ² -10 ³	10 ³ -10 ⁴	≥10 ⁴
Salmonella	not detected in 25g			detected
<i>Listeria monocytogenes (L. monocytogenes)</i>	not detected in 25g	detected but <10 ² #		≥10 ² ##

NOTE:

*see below "Standard Plate Counts" for definition of level.

** Pathogenic strains of *E. coli* should be absent.

Foods with a long shelf life stored under refrigeration should have no *L. monocytogenes* detected in 25g.

The detection of *L. monocytogenes* in ready-to-eat-foods prepared specifically for “at risk” population groups (the elderly, immuno-compromised and infants) should also be considered as potentially hazardous.

SET +ve: Staphylococcus enterotoxin positive.

N/A – SPC testing not applicable. This applies to foods such as fresh fruits and vegetables (including salad vegetables), fermented foods and foods incorporating these (such as sandwiches and filled rolls).

Level 1 – applies to ready-to-eat foods in which all components of the food have been cooked in the manufacturing process/preparation of the final food product and, as such, microbial counts should be low i.e. fried chicken.

Level 2 – applies to ready-to-eat foods which contain some components which have been cooked and then further handled (stored, sliced or mixed) prior to preparation of the final food or where no cooking process has been used i.e. custard slice.

Level 3 – SPC not applicable. This applies to foods such as fresh fruits and vegetables (including salad vegetables), fermented foods and foods incorporating these (such as sandwiches and filled rolls). It would be expected that these foods would have an inherent high SPC because of the normal microbial flora present

An examination of the microbiological quality of a food should not be based on SPC alone. The significance of high (unsatisfactory) SPC cannot truly be made without identifying the predominant microorganisms or other microbiological testing.

SURVEY

This survey was conducted between July 2011 and June 2012. A total of 147 samples were collected from thirty eight different ACT retail outlets. A total of ten re-samples were also collected. The samples were randomly collected by the Public Health Officers (PHO) and processed by the Microbiology Unit of the Health Protection Service (HPS). The survey collected multiple samples from single outlets and in general outlets were only tested once.

The samples were collected in such a manner as to cover a wide range of the available RTE food ranging from dips to grilled chicken. All of the samples were tested for the hygiene indicators SPC and *E.coli*, and the food pathogens coagulase positive *Staphylococci*, *Salmonella* species and *L. monocytogenes*. Foods containing pasta or rice were also tested for *B. cereus*.

Where the HPS identifies non compliance issues in food businesses, corrective actions are addressed through a graduated and proportionate response. Unsatisfactory results, excluding those for SPC are re-sampled. Marginal results may be re-sampled; this is dependent on resources as these foods are still considered compliant. Unsatisfactory SPC results are not re-sampled unless pathogens are also isolated.

MICROBIOLOGICAL METHOD OF ANALYSIS

- *Salmonella* species AS 5013.10 – 2009 (modified).
- SPC AS 5013.5 – 2004.
- *B. cereus* AS 5013.2 – 2007.
- Coagulase positive *staphylococci* AS 5013.12.2 – 2004.
- *E. coli* ISO 16649.2 – 2001.
- *L. monocytogenes* AS 5013.24.1 – 2009 (modified).

The sample preparation for SPC, *E. coli*, coagulase positive *staphylococci* and *B. cereus* consisted of:

- 25g of sample being homogenised with 225mL of 0.1% peptone diluent
- subsequent serial dilutions were prepared for use in enumeration.

***B. cereus* enumeration:** Spread plates (using a 100µl of each dilution) on a solid selective medium containing egg yolk and mannitol (MYP agar). Typical large, pink colonies, with or without lecithinase action were counted and a proportion of the colonies confirmed by a haemolysis test and spore staining. *B. cereus* cells are rods 4-5 µm long and 1-1.5 µm wide and stain red. The cells contain black-stained lipid globules. The spores stain green, are ellipsoidal in shape, central to sub central in position, and do not swell the sporangium.

Coagulase positive *Staphylococci* enumeration: Pour plates (using 1.0 ml of each dilution) of Baird Parker medium with rabbit plasma fibrinogen added were prepared in duplicate and incubated at 37°C/48h. Typical black colonies, surrounded by a halo of precipitation were counted.

***E. coli* enumeration:** Pour plates using 1.0 ml in each plate of TBX media were prepared and incubated at 37 degrees Celsius for 4 hours and then 44 degrees Celsius for 18-24 hours. Typical blue/green colonies were counted.

***Salmonella* detection:** 25g of sample was weighed out aseptically and homogenised with 225mL buffered peptone water (non-selective enrichment) and incubated at 37°C/16-20h. Aliquots were then transferred into Brain Heart Infusion broth (BHI) and incubated for 3h. DNA was extracted from 200uL of enriched BHI. This was screened for the presence of salmonella using a BAX cyber green Polymerase Chain Reaction (PCR) and a BAX Q7. No confirmation testing was performed as there were no samples that screened positive.

SPC: Pour plates (using a 1.0ml of each dilution or 0.1ml at the -6 dilution) of plate count agar where incubated at 30 °C/72h. Plates from the dilution on which there are greater 15 and less than 300 colonies visible were counted. Counts outside this range were considered estimate counts only.

***L. monocytogenes* detection:** 25g of sample was weighed out aseptically and homogenised with 225mL half fraser broth (selective enrichment) and incubated at 30°C/24h. Aliquots were then transferred into a single tube of Fraser broth incubated for 37°C/48h and MOPS BLEB broth incubated for 37°C/24h. DNA was extracted from 200uL of enriched MOPS BLEB broth. This was screened for the presence of *L. monocytogenes* using a BAX cyber green PCR and a BAX Q7. No confirmation testing was performed as there were no samples that screened positive.

RESULTS

Test	Coagulase positive staphylococci (n=142)	<i>Listeria monocytogenes</i> (n=145)	<i>Salmonella</i> sp (n=147)	<i>E.coli</i> (n=147)	SPC (n=142)	<i>Bacillus cereus</i> (n=28)
Number of marginal samples	Nil	3	N/A	11	4	1
Number of unsatisfactory samples	Nil	Nil	N/A	1	7	Nil
Number of Potentially Hazardous samples	Nil	Nil	Nil	N/A	N/A	Nil

Detailed results are tabled in [Appendix B](#).

DISCUSSION

SPC

One hundred and forty two samples were tested for SPC. Five samples were not tested due to testing media availability. The results for all the samples ranged between <50 and 6.4×10^8 colony forming units per gram (cfu/g). A total of three samples were in the marginal range (2.1% of the total SPC tests) and a total of seven samples were in the unsatisfactory range (4.9% of the total SPC tests).

Forty two samples were assessed as being in the Level 1 category. The results for these products ranged from <50 to 1.4×10^5 cfu/g. Four samples (9.5% of the total level 1 SPC tests) were in the marginal category. Two samples (4.8% of the total level 1 SPC tests) were in the unsatisfactory category: satay chicken and half a roast chicken. High SPC for cooked products suggests that the handling or storage of these foods may have been less than optimal. No re-samples were taken of these foods as no pathogens or *E. coli* were detected at the time of testing.

Twenty two samples were assessed as being in the level 2 category. The results for these products ranged from <50 to 1.1×10^8 cfu/g. No samples were in the marginal category. Five samples (22.7% of the total level 2 SPC tests) were in the unsatisfactory category: chicken kebab garlic sauce, doner kebab garlic sauce, prawns, egg and egg curried. High SPC for cooked products suggests that the handling or storage of these foods may have been less than optimal. No re-samples were taken of these foods as no pathogens or *E. coli* were detected at the time of testing.

A total 78 samples were assessed as applying to the Level 3 SPC criterion. The SPC test is not applicable to these products. The results for these products ranged from as low as <50 cfu/g to 6.4×10^8 cfu/g.

E. coli

All samples (147) were tested for *E. coli*. The presence of *E. coli* in RTE foods is undesirable because it indicates that the food has possibly been prepared under poor hygienic conditions. Ideally *E. coli* should not be detected and as such a level of <3

cfu/g has been set for satisfactory samples. One hundred and thirty five (91.8%) samples tested in this survey had <3 cfu/g of *E. coli* and met the satisfactory criterion. There were eleven (7.5%) samples in the marginal category. Three of the marginal samples (ham/cheese/tomato roll, ham/tomato/onion/lettuce roll and chicken/lettuce sandwich) were re-sampled as one was positive for *L. monocytogenes* and were tested for *E. coli* and all of the pathogens in Table 1. Follow-up action and five re-samples were taken including other products from the same premises from the premise that reported the unsatisfactory result. The re-samples reported one marginal result (chicken and cheese sandwich) and one unsatisfactory result (chicken /lettuce/tomato/beetroot sandwich). Corrective action was advised and a further five re-samples collected and were tested for *E. coli* and other pathogens listed in Table 1 to verify corrective action. All five re-samples reported satisfactory results.

There was one (0.7%) sample (smoked salmon sandwich) in the unsatisfactory category. The premise was advised of corrective action that could be taken to improve food preparation and handling.

The detection of *E. coli* in foods is not a direct indication that the food is unsafe rather it is an indication of potential problems involving the preparing and handling of foods.

Coagulase positive *Staphylococci*

One hundred and forty seven samples were tested for coagulase positive *Staphylococci*. All samples tested in this survey had met the satisfactory criterion i.e. <100 cfu/g.

Salmonella

Salmonella spp. was not detected in any of the 147 samples tested; two samples were not tested due insufficient sample size. RTE foods should be free of *Salmonella* as consumption of food containing this pathogen may result in food borne illness. All RTE foods are tested for the presence of *Salmonella* in 25g.

L. monocytogenes

The detection of *L. monocytogenes* in such foods indicates the food was inadequately prepared or the food was contaminated post preparation. The detection of higher levels (>10² cfu/g) of *L. monocytogenes* in RTE foods indicates a failure of food handling controls and is also considered a public health risk.

All RTE foods are tested for the presence of *L. monocytogenes* in 25g. If *L. monocytogenes* is detected, PHO will inspect the premises and collect a re-sample of the food item if it is available. This re-sample will be tested semi-quantitatively to measure the level of *L. monocytogenes* in the food.

One hundred and forty five samples were analysed for *L. monocytogenes*. Three samples reported marginal results (2.1%). Five samples were not tested due to testing media not being available. One marginal result was from one premises and two from another premises. Follow-up action and five re-samples were taken for one of the positive samples (ham/cheese/tomato roll) from the first premises . All of re-samples reported satisfactory results.

B. cereus (Tested for in RTE foods containing rice only)

Twenty eight samples containing rice or pasta were tested for *B. cereus*. Twenty seven samples (96.4%) tested were satisfactory reporting counts of less than 100cfu/g. There were two samples (3.6%) samples in the marginal category. There were no samples in the unsatisfactory category.

CONCLUSION

The microbiological quality of the RTE foods surveyed in the ACT is good. Overall the results have improved compared to those found in the previous five years ([Appendix A](#)). Raw results of the analysis are attached at [Appendix B](#). The percentage of satisfactory samples in both the SPC Level 1 and 2 categories have been consistent with the previous year. But the number of satisfactory SPC results has decreased since 2009-2010. This could indicate poor temperature control, inadequate reheating or the age of products sold.

The overall results for pathogens have remained steady when compared to previous years. Coagulase positive *Staphylococci*, *L. monocytogenes* and *B. cereus* results have improved on previous years, whereas satisfactory *E. coli* has decreased. The percentage of satisfactory samples for *Salmonella* has been very consistent with none isolated in the last five years. The poor *E. coli* results may be attributed to a lapse in hygiene and/or proper food preparation.

In conclusion, the results of this survey show a very high level of compliance with the FSANZ RTE Guidelines.

BIBLIOGRAPHY

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APPENDIX A

COMPARISON TO PREVIOUS SURVEYS: 2007–2008, 2008–2009, 2010 -2011 and 2011 - 2012

One can be seen from Tables 1 and 2 below that the quality of RTE foods varies depending on the test. The percentage of satisfactory samples in both the SPC Level 1 and 2 categories have been consistent with the previous year. But the number of satisfactory SPC results has decreased since 2009-2010. Whereas results for pathogens tested has improved on previous years.

Table 1

Comparison of Standard Plate Counts (rounded)

%	Satisfactory					Marginal					Unsatisfactory				
	07-08	08-09	09-10	10-11	11-12	07-08	08-09	09-10	10-11	11-12	07-08	08-09	09-10	10-11	11-12
Level 1	98.6	90.0	100	85.9	88.1	1.4	8.0	0.0	7.8	7.1	0.0	2.0	0.0	6.3	4.8
Level 2	91.1	90.0	76.5	80.8	77.3	5.1	6.0	0.0	7.7	0.0	3.8	4.0	23.5	11.5	22.7
Level 3															

Table 2

%	2007-2008				2008-2009				2009-2010				2010-2011				2011-2012			
	Sat	Marg	Unsat	Pot. Haz	Sat	Marg	Unsat	Pot. Haz	Sat	Marg	Unsat	Pot. Haz	Sat	Marg	Unsat	Pot. Haz	Sat	Marg	Unsat	Pot. Haz
<i>E. coli</i>	93.1	6.5	0.4		94.4	5.0	0.6		95.3	3.5	1.2		97.5	1.9	0.6		91.8	7.5	0.7	
<i>Coagulase +ve Staphylococcus</i>	99.1	0.9	0.0	0.0	100	0.0	0.0	0.0	94.2	5.8	0.0	0.0	100	0.0	0.0	0.0	100	0.0	0.0	0.0
<i>Salmonella</i>	100			0.0	100			0.0	100			0.0	100			0.0	100			0.0
<i>L. monocytogenes</i>	99.6	0.4		0.0	100	0.0		0.0	100	0.0		0.0	96.8	3.2		0.0	97.9	2.1		0.0
<i>B. cereus</i>	93.1	6.9	0.0	0.0	92.0	8.0	0.0	0.0	100	0.0	0.0	0.0	83.3	2.8	8.3	5.6	96.4	3.6	0.0	0.0

Comparison between the Microbiological Quality indicators

Sat – Satisfactory, Unsat – Unsatisfactory, Marg – Marginal, Pot. Haz – Potentially Hazardous.



Not applicable

Appendix B

Sample	Level	SPC	E. coli	Staph	Salmonella	L. monocytogenes	B. cereus	Assessment
Prawn and avocado sushi	3	3000000	<3	<50	Absent	Absent	<50	S
Teriyaki chicken sushi	3	58000000	<3	<50	Absent	Absent	<50	S
Chicken shish kebab	3	100*	<3	<50	Absent	Absent	N/A	S
Spring roll	1	<50	<3	<50	Absent	Absent	N/A	S
Lamb gozleme	3	5000*	<3	<50	Absent	Absent	N/A	S
Pumpkin, walnut and pine nut salad	3	1500000	<3	<50	Absent	Absent	N/A	S
Basil pesto pasta salad	3	15000*	<3	<50	Absent	Absent	<50	S
Ceasar salad	3	3300000*	<3	<50	Absent	Absent	N/A	S
Potato salad	3	100000	<3	<50	Absent	Absent	N/A	S
Fruit salad	3	4800	<3	<50	Absent	Absent	N/A	S
Devil wings	1	100*	<3	<50	Absent	Absent	N/A	S
Spring rolls	1	50*	<3	<50	Absent	Absent	N/A	S
Dim Sim	1	50*	<3	<50	Absent	Absent	N/A	S
Ham and pineapple pizza	1	700*	<3	<50	Absent	Absent	N/A	S
Pepperoni pizza	1	300*	<3	<50	Absent	Absent	N/A	S
Gourmet pasta salad	3	22000	<3	<50	Absent	Absent	<50	S
1/2 roast chicken	1	<50	<3	<50	Absent	Absent		S
Crab inari	3	340000	<3	<50	Absent	Absent	50	S
Spicy salmon roll	3	1200000	<3	<50	Absent	Absent	<50	S
Duck roll	3	5400000*	<3	<50	Absent	Absent	<50	S
Alfresco Salad	3	750000	<3	<50	Absent	Absent	N/A	S
Loose Mixed Mesculin Lettuce	3	3700000*	<3	<50	Absent	Absent	N/A	S
Half Rockmelon	3	12000*	<3	<50	Absent	Absent	N/A	S
Strawberries	3	1800	<3	<50	Absent	Absent	N/A	S
Four Seasons Coleslaw	3	9000000*	<3	<50	Absent	Absent	N/A	S
Apple crumble slice	2	<50	<3	<50	Absent	Absent	N/A	S
Honey roll	2	3600*	<3	<50	Absent	Absent	N/A	S
Egg sandwich	3	90000*	<3	<50	Absent	Absent	N/A	S
Bacon quiche	1	<50	<3	<50	Absent	Absent	N/A	S
Custard tart	2	700*	<3	<50	Absent	Absent	N/A	S
Mango mousse	2	20000*	<3	<50	Absent	Absent	N/A	S
Vanilla slice	2	50*	<3	<50	Absent	Absent	N/A	S
Smoked salmon quiche	1	300*	<3	<50	Absent	Absent	N/A	S
Spinach and feta slice	1	1800	<3	<50	Absent	Absent	N/A	S
Godfather sandwich	3	50000*	<3	<50	Absent	Absent	N/A	S
Chicken mushrooms roll	3	15000000	<3	<50	Absent	Absent	N/A	S
Chicken veg burger	3	16000000	<3	<50	Absent	Absent	N/A	S
Mushroom avocado roll	3	16000000	<3	<50	Absent	Absent	N/A	S
Sample	Level	SPC	E. coli	Staph	Salmonella	L.	B. cereus	Assessment

						monocytogenes		
Teriyaki chicken roll	3	14000000*	<3	<50	Absent	Absent	N/A	S
Tandoori chicken roll	3	1000000	<3	<50	Absent	Absent	N/A	S
Ham and cheese roll	3	<50	<3	<50	Absent	Absent	N/A	S
Escargot danish	2	<50	<3	<50	Absent	Absent	N/A	S
Lamb and rosemary pie	1	150*	<3	<50	Absent	Absent	N/A	S
Apple slice	2	200*	<3	<50	Absent	Absent	N/A	S
Custard tart	2	<50	<3	<50	Absent	Absent	N/A	S
Chicken Kebab Garlic sauce	2	5800000*	<3	<50	Absent	Absent	N/A	U
Doner Kebab Garlic sauce	2	2200000	<3	<50	Absent	Absent	N/A	U
Ham, cheese and tomato sandwich	3	160000	<3	<50	Absent	Absent	N/A	S
Chickpea falafel salad roll	3	500000	<3	<50	Absent	Absent	N/A	S
Moroccan chicken roll	3	>1000000*	<3	<50	Absent	Absent	N/A	S
Turkey breast salad roll	3	5000000*	7	<50	Absent	Absent	N/A	M
chicken schintzel wrap	3	14000000*	<3	<50	Absent	Absent	N/A	S
Chicken Kebab	2	100*	<3	<50	Absent	Absent	N/A	S
Chicken Wings	1	<50	<3	<50	Absent	Absent	N/A	S
Meat Pie	1	<50	<3	<50	Absent	Absent	N/A	S
Dim Sims	1	100*	<3	<50	Absent	Absent	N/A	S
Chiko Roll	1	<50	<3	<50	Absent	Absent	N/A	S
Potato Pie	1	20000*	<3	<50	Absent	NP	N/A	M
Apple and coconut tart	2	36000*	<3	<50	Absent	NP	N/A	S
Lemon custard slice	2	3800	<3	<50	Absent	Absent	N/A	S
Prawn rice paper rolls	3	39000000	<3	<50	Absent	Absent	N/A	S
Tuna, dill, potato bake	1	<50	<3	<50	Absent	Absent	N/A	S
Seafood salad	3	720000	17*	NP	Absent	Absent	N/A	M
Coleslaw	3	540000	<3	NP	Absent	Absent	N/A	S
Rice pudding	2	50*	<3	NP	Absent	Absent	<50	S
Kebab	3	140000*	<3	NP	Absent	Absent	N/A	S
Half roast chicken	1	120000*	<3	NP	Absent	Absent	N/A	U
Caesar salad roll	3	75000*	<3	<50	Absent	Absent	N/A	S
Chicken and Avocado salad	3	230000	23	<50	Absent	Absent	N/A	M
Beef spring rolls	1	<50	<3	<50	Absent	Absent	N/A	S
Chicken skewers	1	10000*	<3	<50	Absent	Absent	N/A	M
Hot lamb curry	1	<50	<3	<50	Absent	Absent	N/A	S
Lemon chicken	1	600*	<3	<50	Absent	Absent	N/A	S
Chilli beef	1	7600*	<3	<50	Absent	Absent	N/A	S
Beef and black bean	1	5000*	<3	<50	Absent	Absent	N/A	S

Sample	Level	SPC	E. coli	Staph	Salmonella	L. monocytogenes	B. cereus	Assessment
Steamed dim sim	1	850*	<3	<50	Absent	Absent	N/A	S
Little spring rolls	1	200*	<3	<50	Absent	Absent	N/A	S
Thai beef salad	3	190000	<3	<50	Absent	Absent	N/A	S
Potato salad	3	17000	<3	<50	Absent	Absent	N/A	S
Caesar salad	3	580000	<3	<50	Absent	Absent	N/A	S
BBQ chicken salad	3	5800000*	<3	<50	Absent	Absent	N/A	S
Quiche (Spinach & tomato)	1	<5000	<3	<50	Absent	Absent	N/A	S
Potato bake	1	<50	<3	<50	Absent	Absent	N/A	S
Tortellini	1	200*	<3	<50	Absent	Absent	<50	S
Noodle stir fry	1	350*	<3	<50	Absent	Absent	<50	S
Meatball and rice	1	2200	<3	<50	Absent	Absent	<50	S
Cannelloni	1	550*	<3	<50	Absent	Absent	<50	S
Squid salad	3	1500000	<3	<50	Absent	Absent	<50	S
Prawn sushi roll	3	60000*	<3	<50	Absent	Absent	<50	S
Fried chicken sushi roll	3	240000	<3	<50	Absent	Absent	<50	S
Tofu sushi roll	3	540000	<3	<50	Absent	Absent	<50	S
Eel sushi roll	3	100000*	<3	<50	Absent	Absent	<50	S
Blueberry cake/bread	2	16000	<3	<50	Absent	Absent	<50	S
Bannana cake/ bread	2	2400	<3	<50	Absent	Absent	<50	S
Ham roll	3	30000000	<3	<50	Absent	Absent	<50	S
Chicken roll	3	320000000*	<3	<50	Absent	Absent	<50	S
Vegetarian roll	3	19000000	<3	<50	Absent	Absent	<50	S
Ham/cheese/tomato sandwich	3	420000	<3	<50	Absent	Absent	N/A	S
Ham/cheese/tomato roll	3	200000	7*	<50	Absent	Present	N/A	M
Ham/tomato/onion/lettuce roll	3	380000	3*	<50	Absent	Absent	N/A	M
Roast beef/tomato/onion sandwich	3	32000*	<3	<50	Absent	Absent	N/A	M
Chicken/lettuce sandwich	3	320000	20*	<50	Absent	Absent	N/A	M
1/2 Roast chicken	1	150*	<3	<50	Absent	Absent	N/A	S
Ham and cheese roll	3	<50	<3	<50	Absent	Absent	N/A	S
Prawns	2	1300000	<3	<50	Absent	Absent	N/A	U
Custard tart	2	600*	<3	<50	Absent	Absent	N/A	S
Potato, egg and bacon salad	3	190000	<3	<50	Absent	Absent	N/A	S
Chickpea/ sweet potato salad	3	NP	<3	<50	Absent	Absent	N/A	S
Roast potato and pumpkin salad	3	NP	<3	<50	Absent	Absent	N/A	S
Tabouli	3	NP	3*	<50	Absent	Absent	N/A	M
Sweet chilli chicken noodle salad	3	NP	<3	<50	Absent	Absent	<50	S
Egg and bacon potato salad	3	NP	<3	<50	Absent	Absent	N/A	S

Sample	Level	SPC	E. coli	Staph	Salmonella	L. monocytogenes	B. cereus	Assessment
Pumpkin and beetroot salad	3	96000000	<3	<50	Absent	Absent	N/A	S
Chicken schnitzel salad	3	1500000	<3	<50	Absent	Absent	N/A	S
Chicken pasta salad	3	120000000	<3	<50	Absent	Absent	<50	S
Caesar salad Wrap	3	420000	<3	<50	Absent	Absent	N/A	S
Chicken and avocado roll	3	150000	<3	<50	Absent	Absent	N/A	S
Pasta (penne)	1	50*	<3	<50	Absent	Absent	<50	S
Gravy	2	250*	<3	<50	Absent	Absent	N/A	S
Egg	2	110000000	<3	<50	Absent	Absent	N/A	U
Egg curried	2	32000000	17*	<50	Absent	Absent	N/A	U
Coleslaw	3	420000000*	<3	<50	Absent	Absent	N/A	S
Turkey / cranberry sauce sandwich	3	2300000	<3	<50	Absent	Absent	N/A	S
Smoked salmon sandwich	3	330000	3300*	<50	Absent	Absent	N/A	U
Ham/cheese/spinach sandwich	3	13000000*	<3	<50	Absent	Absent	N/A	S
Chicken/ cheese sandwich	3	3400000*	90*	<50	Absent	Absent	N/A	M
Bacon/lettuce/tomato roll	3	3400000*	17*	<50	Absent	Absent	N/A	M
Falafel balls	3	140000000	<3	<50	Absent	Absent	N/A	S
Zucchini Balls	3	850*	<3	<50	Absent	Present	N/A	M
Small tabouli	3	640000000*	57*	<50	Absent	Present	N/A	M
Small tuna salad	3	220000000*	<3	<50	Absent	Absent	50	S
Small pasta salad	3	1100000	<3	<50	Absent	Absent	450	M
Toasted sandwich (ham, cheese, tomato)	3	100000*	<3	<50	Absent	Absent	N/A	S
Toasted sandwich (chicken+ cheese)	2	10000*	<3	<50	Absent	Absent	N/A	S
Pie (chicken+ leek)	1	<50	<3	<50	Absent	Absent	N/A	S
Egg bacon roll	1	50*	<3	<50	Absent	Absent	N/A	S
Pie (Aussie)	1	<50	<3	<50	Absent	Absent	N/A	S
Fried rice	1	40000*	<3	<50	Absent	Absent	<50	M
Beef black pepper	1	75000*	<3	<50	Absent	Absent	N/A	M
Satay chicken	1	140000*	<3	<50	Absent	Absent	N/A	U
Kung pao Chicken	1	30000*	<3	<50	Absent	Absent	N/A	M
Honey Chicken	1	150*	<3	<50	Absent	Absent	N/A	S
Caesar salad with anchovies	3	3700000*	<3	<50	Absent	Absent	N/A	S
Greek salad	3	6000000	<3	<50	Absent	Absent	N/A	S
Chicken focaccia	3	2700000*	<3	<50	Absent	Absent	N/A	S
Roast veg. focaccia	3	22000000	<3	<50	Absent	Absent	N/A	S
Berry yoghurt	3	74000000	<3	<50	Absent	Absent	N/A	S
Ham and pickle sandwich	3	63000*	<3	<50	Absent	Absent	N/A	S

Sample	Level	SPC	E. coli	Staph	Salmonella	L. monocytogenes	B. cereus	Assessment
<i>Beef and pickle sandwich</i>	3	22000	<3	50	Absent	Absent	N/A	S
<i>Chicken/lettuce/tomato/beetroot Sandwich</i>	3	210000	110	<50	Absent	Absent	N/A	U
<i>Ham and cheese sandwich</i>	3	1800000	<3	<50	Absent	Absent	N/A	S
<i>Chicken and cheese sandwich</i>	3	160000	7	<50	Absent	Absent	N/A	M
<i>Raw crumbed chicken</i>	3	35000	<3	<50	Absent	NP	N/A	S
<i>Sliced iceberg lettuce</i>	3	2600000	<3	<50	Absent	NP	N/A	S
<i>Leg ham</i>	2	22000	<3	<50	Absent	NP	N/A	S
<i>Beetroot</i>	2	100*	<3	<50	Absent	NP	N/A	S
<i>Sliced white bread</i>	1	1000*	<3	<50	Absent	NP	N/A	S

Italic results are re-samples, * = estimate count only, NP = Not Performed, N/A = Not Applicable.