ACT HEALTH PROTECTION SERVICE

MICROBIOLOGICAL QUALITY OF CONDIMENTS

AUGUST– DECEMBER 2015

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EXECUTIVE SUMMARY

This survey focused on condiments that are used in preparing meals or accompanying meals found at cafes, food courts, clubs and restaurants. A condiment is a spice, sauce, gravy, or other food preparation that is added to food to impart a particular flavour, to enhance its flavour or to complement the dish. Condiments also have risks associated with the way they are made and handled. They are often made in large batches and may be kept in-use for inappropriately long periods or not under temperature control.

The survey of condiments was undertaken to determine the compliance of products available in the ACT market to Food Standards Australia New Zealand (FSANZ) Guidelines for the Microbiological Examination of RTE Foods 2001 (FSANZ RTE Guidelines).

Ninety one samples were taken from nineteen ACT retail outlets and one follow-up sample. All of the samples were tested for the hygiene indicator *E. coli* and standard plate count (SPC) as well as the food pathogens: coagulase positive *Staphylococcus; Clostridium perfringens; Bacillus cereus; Salmonella sp;* and *L. monocytogenes.* A total of 637 tests were conducted.

This snap-shot of 19 different retailers suggests that the microbiological quality of condiments in the ACT is generally good. *Bacillus cereus* was found in seven samples tested five results were marginal, one unsatisfactory and the other potentially hazardous. In conclusion, the results of this survey show a high level of compliance with the FSANZ RTE Guidelines for the surveyed samples.

BACKGROUND

A condiment is a spice, sauce, gravy, or other food preparation that is added to food to impart a particular flavour, to enhance its flavour or to complement the dish. This survey focused on condiments that are used in preparing meals or accompanying meals found at cafes, food courts, clubs and restaurants. The survey focus was on those made on site, and those containing raw egg, it did not focus on spices. These foods are often potentially hazardous[1] as they have the potential to cause food poisoning if they are not handled correctly.

Egg based condiments such as béarnaise, aioli, mayonnaise and tartare sauce have shown to be implicated in multiple outbreaks. As seen in the Table 1 *Salmonella* is the principal pathogen of concern with condiments that are egg-based. Egg based condiments are potentially high risk foods as they can easily be contaminated by using dirty eggs or eggs with cracked shells. Contamination can also occur when cracking or separating eggs manually.

Condiments also have risks associated with the way they are made and handled. They are often made in large batches and may be kept in-use for inappropriately long periods or not under temperature control. This increases the chance of pathogenic bacteria growing to sufficient levels to cause food poisoning. In the case of gravies, they may be heated, cooled and re-heated successively or held at temperatures not high enough to stop the growth of bacteria which can quickly lead to high levels of *Clostridium perfringens* and *Bacillus cereus*. Temperature abuse usually occurs when refrigerators are opened and closed multiple times during service, sauce dispensers are left on work benches for ease of use and condiments are not kept hot enough.

Appropriate cleaning of equipment or lack of between batches can be another source of contamination. Topping up of sauce bottles can greatly increase the risk of food poisoning.

Looking back to the beginning of 2013 through OzFoodNet quarterly reports, condiments have caused large numbers of outbreaks nationally and in the Australian Capital Territory (ACT).The following table outlines the outbreaks that were attributed to condiments:

[1] The Australia New Zealand Food Standards Code defines **potentially hazardous food** as food that has to be kept at certain temperatures to minimise the growth of any pathogenic microorganisms that may be present in the food or to prevent the formation of toxins in the food.

Table 1 Outbreaks of foodborne or suspected foodborne disease attributed to condiments and reported by OzFoodNet January 2013- March 2014

Year	Month	State	Vehicle	Agent	Number affected	Setting
2014	March	Victoria (VIC)	Undercooked eggs in hollandaise sauce	*S*. Typhimurium	14	Restaurant
2014	March	VIC	Raw egg aioli	*S*. Typhimurium	3	Restaurant
2014	Feb	VIC	Suspect raw egg aioli	*S*. Typhimurium	13	Restaurant
2014	Feb	VIC	Raw egg Mayonnaise	*S*. Typhimurium	15	Restaurant
2014	Feb	VIC	Raw egg Aioli	*S*. Typhimurium	2	Restaurant
2014	Feb	VIC	Lightly cooked eggs and/ or hollandaise sauce	*S*. Typhimurium	2	Restaurant
2014	Feb	VIC	Lightly cooked eggs and/ or hollandaise sauce	*S*. Typhimurium	4	Camp
2014	Mar	South Australia (SA)	Suspected raw egg contamination of pesto	*S*. Typhimurium	33	Restaurant
2014	Feb	SA	Raw egg Aioli	*S*. Typhimurium	4	Restaurant
2014	Jan	Queensland (QLD)	Suspected raw egg sauce	*S*. Typhimurium	10	Restaurant
2014	Feb	New South Wales (NSW)	Raw egg mayonnaise	*S*. Typhimurium	8	Restaurant
2014	Feb	NSW	Vietnamese rolls with raw egg butter	*S*. Typhimurium	26	Bakery
2014	Jan	NSW	Raw egg Caesar salad dressing	*S*. Typhimurium	2	Restaurant
2013	Oct	SA	Aioli made with raw egg	*S*. Typhimurium	11	Restaurant
2013	Nov	QLD	Potato salad containing raw egg mayonnaise	*S*. Typhimurium	350	Restaurant
2013	Oct	NSW	Vietnamese-style rolls containing raw egg mayonnaise	*S*. Typhimurium	49	Bakery
2013	Aug	SA	Tartare sauce	*S*. Typhimurium	9	Restaurant
2013	Jul	QLD	Eggs Benedict	*S*. Typhimurium	30	Restaurant
2013	Jun	VIC	Aioli with raw eggs	*Unknown*	3	Private residence
2013	Jun	VIC	Raw egg mayonnaise	*S*. Typhimurium	2	Private residence
2013	May	VIC	Tartare sauce/aioli (raw eggs)	*S*. Typhimurium	36	Restaurant
2013	May	NT	Gravy	*S*. Typhimurium	5	Fair/Festival/ mobile service
2013	Jun	NSW	Béarnaise sauce	*S*. Typhimurium	17	Private residence
2013	May	ACT	Potato Salad containing raw egg mayonnaise	*S*. Typhimurium	161	Restaurant
2013	Feb	NT	Caesar salad dressing raw egg	*S*. Typhimurium	4	Private residence

All but one of these tabled outbreaks were attributed to or suspected to be attributed to raw egg products. Most of them were found to be caused in food retailers such as restaurants or bakeries. Other outbreaks in recent years that have been caused by non-egg based condiments are gravy in

NSW (January 2006), potato gravy in QLD (February 2012), mushroom sauce in NSW (August 2012) and gravy in NT (May 2013).
This surveys set out to determine the bacteriological status of condiments available in the ACT market and the compliance of these products to the Food Standards Australia New Zealand (FSANZ) Guidelines for the Microbiological Examination of Ready-to-Eat (RTE) Foods 2001 (FSANZ RTE Guidelines).

STANDARDS

The Food Standards Australia New Zealand Food (FSANZ) Ready to Eat (RTE) Guidelines identifies four categories of microbiological quality ranging from satisfactory to potentially hazardous. Table 2 is an extract from the FSANZ RTE Guidelines. Table 2 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 the public health.

Table 2 Categories of Microbiological Quality from the RTE Guidelines produced by FSANZ

Test	Microbiological Quality (CFU per gram)			
	Satisfactory	**Marginal**	**Unsatisfactory**	**Potentially Hazardous**
Standard Plate Count				
Level 1	$< 10^4$	$< 10^5$	Greater than or equal to 10^5	-
Level 2	$< 10^6$	$< 10^7$	Greater than or equal to 10^7	-
Level 3	NA	NA	NA	-
Indicators				
Escherichia coli (E. coli)	<3	3-100	>100	*
Pathogens				
Coagulase positive *staphylococci (Staph)*	$<10^2$	10^2-10^3	10^3-10^4	$\geq 10^4$ SET +ve
Bacillus cereus (B. cereus)	$<10^2$	10^2-10^3	10^3-10^4	$\geq 10^4$
Clostridium perfringens (C. perfringens)	$<10^2$	10^2-10^3	10^3-10^4	$\geq 10^4$
Salmonella spp.	not detected in 25g			detected
Listeria monocytogenes (L. monocytogenes)	not detected in 25g	detected but $<10^2$ #		$\geq 10^{2\,\#\#}$

NOTE:
*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.
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 August and December 2015. During this period ninety one initial samples and one follow-up sample were collected randomly by Health Protection Service (HPS) Public Health Officers (PHO) from nineteen ACT retail outlets and processed by the HPS laboratory. Thirty nine of the samples taken were identified as being condiments made on site. All of the samples were tested for the hygiene indicator *E. coli* and the food pathogens; coagulase positive *Staphylococci, C. perfringens, B. cereus, Salmonella spp* and *L. monocytogenes.* All of the samples were also tested to determine the standard plate count (SPC). The survey collected multiple samples from single outlets and apart from one re-sample, outlets were only tested once. Temperatures of the condiments were taken at the time of sampling according to routine inspection practices of the PHOs.

Where the HPS identifies non compliance issues in food businesses, corrective actions are addressed through a graduated and proportionate response. Marginal results may be re-sampled; this is dependent on resources as these foods are still considered compliant. Unsatisfactory results are re-sampled if the food item is still available.

MICROBIOLOGICAL METHOD OF ANALYSIS

Samples were tested for the presence of:

- *Salmonella* species AS 5013.10 – 2009 (modified)
- *B. cereus* AS 5013.2 - 2007
- Coagulase positive *Staphylococci* AS 5013.12 – 2004 (modified)
- *E. coli* AS 5013.19.1– 2012 (modified)
- *L. monocytogenes AS* 5013.24.1– 2009 (modified)
- *C. perfringens* AS 5013.16 – 2006
- Specific plate count (SPC) AS 5013.5 – 2004.

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

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

***E. coli* enumeration:** Pour plates of Tryptone bile x-glucuronide medium (TBX) agar using 1ml of 10^{-1} dilution were prepared in triplicate and incubated at 37^{o}C for 4 hours followed by 44°C for 20 hours. *E. coli* colonies appeared blue/green after incubation.

B. cereus enumeration: Spread plates (using a 100µl of 10^{-1} in duplicate and 10^{-3} dilution) on a solid selective medium containing egg yolk and mannitol (MYP) were incubated at 30°C for 24-48 hours. Typical large, pink colonies, with or without lecithinase action were counted and a proportion of the colonies confirmed by a haemolysis test on Sheep Blood Agar. Statutory samples were further confirmed using spore staining.

C. perfringens **enumeration:** Overlaid pour plates of Egg Yolk free -Tryptose Sulphite Cycloserine (TSCNE) agar using 1ml of 10^{-2} dilution (in duplicate) and 10^{-4} were prepared and incubated anaerobically at 37°C for 24 hours. Typical presumptive *C. perfringens* colonies are black with or without precipitation surrounding the colony. Typical colonies are then confirmed using the API 20A biochemical testing kit.

Coagulase positive *Staphylococci* enumeration: Pour plates of Baird Parker medium using 1ml of 10^{-2} dilution (in duplicate) and 10^{-4} were prepared and incubated at 37°C for 48 hours. Typical black colonies, with a halo of precipitation surrounding the colony were indicative of coagulase activity found in coagulase positive S*taphylococci*.

Salmonella spp **detection:** 25g of sample was weighed out aseptically and homogenised with 225mL buffered peptone water (non-selective enrichment) and incubated at 37°C for 24 hours. 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 spp* using a DuPont BAX Polymerase Chain Reaction (PCR) kit. Selective enrichment broths were inoculated for samples with positive PCR screens using Rappaport-Vassiliadis Soya (RVS) broth incubated at 42°C for 24 hours and Muller-Kauffmann Tetrathionate-novobiocin broth (MKTTn) incubated at 37°C for 24 hours. Confirmation testing was carried out using these broths by plating out a loopful onto the selective agars Xylose Lysine Deoxycholate (XLD) and Hektoen. On XLD, *Salmonella* colonies are typically red with a black centre and on Hektoen they are green with a black centre due to hydrogen sulphide metabolism.

L. monocytogenes **detection:** 25g of sample was weighed out aseptically and homogenised with 225mL Half Fraser broth (selective enrichment) and incubated at 30°C for 24 hours. Aliquots were then transferred into Fraser broths incubated for 37°C for 48 hours and MOPS BLEB broths incubated for 37°C for 24 hours. DNA was extracted from 200uL of enriched MOPS BLEB broth. This was screened for the presence of *Listeria monocytogenes* using a DuPont BAX PCR kit. No confirmation steps were performed as no samples were screened as positive.

RESULTS / DISCUSSION

Temperature

Sixty six samples had their temperature measured at the time of sampling. The Australia New Zealand Food Standards Code- Standard 3.2.2 – Food Safety Practices and General Requirements (Australia Only) require foods that are potentially hazardous to be stored below 5°C or above 60°C to minimise the growth of infectious or toxigenic microorganisms. More than half (65%) of products had a temperature between 5°C and 60°C, outside of the specified ranges. Most commercial made condiments are shelf stable but in house/homemade condiments are generally not shelf stable. Twenty four in-house prepared condiments had their temperature measured at time of sampling and of those, twenty one had temperatures between 5°C and 60°C.

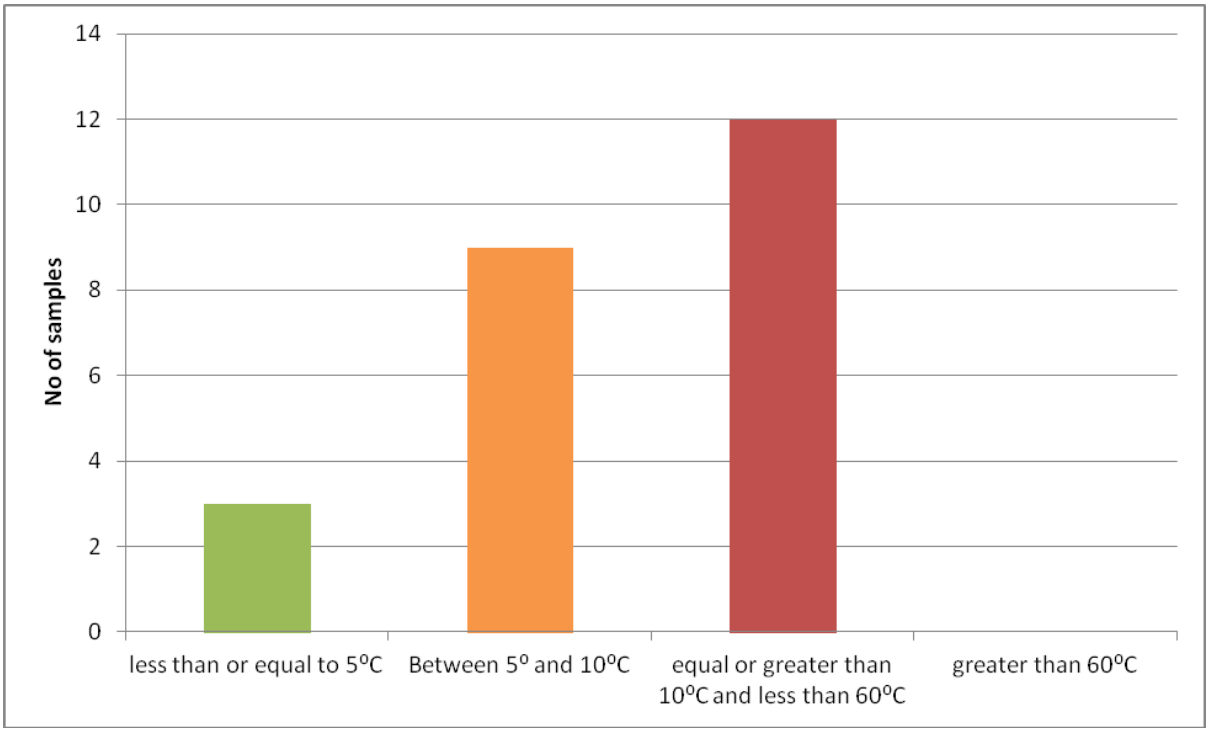

Figure 1 Temperature of sampled In-house condiments at time of sampling

E. coli

All ninety one survey samples 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. *E.coli* is used as a hygiene indicator, 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. All samples (100%) tested in this survey had <3 cfu/g of *E. coli* and met the satisfactory criterion.

Coagulase positive *Staphylococci*

Ninety one samples were analysed for coagulase positive *Staphylococci.* All of the samples tested were satisfactory i.e. <100 cfu/g.

C. perfringens
Ninety one samples were analysed for *C. perfringens.* Only eighty six sample results were reported due to a failed control result invalidating 5 sample results. All of the reported samples were satisfactory i.e. <100 cfu/g.

B. cereus
B. cereus is found in soil and as such raw plant foods such as rice, potatoes, peas, beans and spices are common sources of *B. cereus* (FSANZ, 2013). *B. Cereus* in cooked foods generally occurs as a result of inadequate temperature control as the resistance of spores to thermal processes allows *B. cereus* to multiply quickly during heating and cooling cycles. The detection of high levels (>10^3cfu per gram) of *B. cereus* should result in an investigation of the food handling controls used by the food business. Levels of greater than or equal to 10^4 cfu per gram are considered potentially hazardous as consumption of foods with this level of contamination may result in food borne illness.

During this survey *B. cereus* was tested for in ninety one samples. Eighty four (92.3%) samples were satisfactory; five samples (5.5%) were marginal, one sample was unsatisfactory (1%) and one potentially hazardous (1%). These positive results were obtained from four different premises. The potentially hazardous level of 230000cfu/g of *B.cereus* in harissa was re-sampled by a PHO. The re-sampled harissa was found to have a potentially hazardous level 130000cfu/g of *B. cereus.* The proprietor was advised to resolve the issue. After this advice the proprietor agreed to remove the item from the menu. The unsatisfactory result of 3000cfu/g was found in a tartare sauce sample. The premise was re-visited by a PHO and improper food handling practises observed. The proprietor was advised how the processes could be improved including adequate washing of sauce bottles before re-filling, and sanitising the condiment containers. Action points were added to the restaurants cleaning schedule.

Salmonella spp
Salmonella spp was not detected in any of the ninety one samples tested. RTE foods should be free of *Salmonella spp* as consumption of food containing this pathogen may result in foodborne illness.

L. monocytogenes
L. monocytogenes was not detected in any of the ninety one samples tested. Foods in which all components have been cooked in the final food preparation should be free of *L. monocytogenes*. The detection of *L. monocytogenes* in such foods indicates the food was inadequately cooked or the food was contaminated post preparation.

SPC
All ninety one samples were tested for SPC and in general were assessed as having to comply with the Level 2 SPC criterion at a minimum. Three samples were judged as Level 3 foods according to the SPC criteria as they contained fermented foods (blue cheese dressing, harissa yoghurt and yoghurt base) and therefore no SPC result was applicable. The rest of the 88 sample results ranged between <50 and 12,000,000 colony forming units per gram (cfu/g). Two samples were unsatisfactory for the level 2 criterion with >10^7 CFU/g (mushroom sauce and aioli (egg based)). The remaining eighty six samples (94.5 %) were within the satisfactory range for Level 2 criterion.

Table 3 Summary of Results

Test	**Coagulase positive staphylococci (n=91)**	***L. monocytogenes* (n=91)**	***Salmonella spp* (n=91)**	***E. coli* (n=91)**	**SPC (n=88 Level 2)**	***B. cereus* (n=91)**	***C. perfringens (n=86)***
Number of marginal samples	Nil	Nil	NA	Nil	Nil	5	Nil
Number of unsatisfactory samples	Nil	NA	NA	Nil	2	1	Nil
Number of Potentially Hazardous samples	Nil	Nil	Nil	NA	NA	1	Nil

Detailed results are tabled in Appendix A.

CONCLUSION

This snap-shot of 19 different retailers suggests that the microbiological quality of condiments in the ACT is generally good. Raw results of analysis are attached at Appendix A.

The presence of *B. cereus* may be due to a variety of factors including low level contamination of raw materials and/or contamination during the preparation and storage of the condiment. *B. cereus* is spore forming bacteria with heat stable spores, depending on the cooking process all spores may not have been deactivated and therefore germinate into new bacteria at temperatures between 20°C to 45°C, allowing the organism to multiply. Growth can be inhibited by appropriate temperature control, pH, salt content, water activity and/or the addition of preservatives.

Due to the popularity of in house prepared condiments and their classification as a high risk food it would be prudent to conduct this survey again in the near future to ensure food handling practices remain appropriate especially for those condiments made on site with raw eggs. Additional surveys can also serve as an opportunity for the education of food handlers in terms of minimising the risks associated with high risk foods. Checking and lowering pH, keeping products within temperature control, having a defined and appropriate shelf life for products and using pasteurised eggs are all ways to minimise the risks.

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APPENDIX A

Sample Description	*Salmonella spp*	Coagulase Positive Staph	*E.coli*	*B. cereus*	*L. monocytogenes*	SPC	*C. perfringens*	Made on site?	Temperature	Assessment
	P/A in 25g	cfu/g	cfu per gram	cfu/g	P/A in 25g	cfu/g	cfu/g	Yes/No	˚C	
Tomato sauce	Absent	<50	<3	<50	Absent	950*	<50	N	6.6	S
Chilli sauce	Absent	<50	<3	<50	Absent	300*	<50	N	11.6	S
Mayonnaise	Absent	<50	<3	<50	Absent	50*	<50	N	6.3	S
Gravy	Absent	<50	<3	<50	Absent	850*	<50	Commercial product: made on site	70	S
Hand-made aioli (egg)	Absent	<50	<3	<50	Absent	400*	<50	Y	1.7	S
Sweet chilli sauce	Absent	<50	<3	<50	Absent	300*	<50	N	5.5	S
BBQ	Absent	<50	<3	<50	Absent	50*	<50	N	1.5	S
Tomato sauce	Absent	<50	<3	<50	Absent	<50	<50	N	1.7	S
Caesar dressing	Absent	<50	<3	<50	Absent	20000*	<50	N	1.7	S
Herb Mayo	Absent	<50	<3	<50	Absent	6800	<50	N	5.5	S
Hommus	Absent	<50	<3	50*	Absent	8000	<50	N	5.5	M
Sour Cream	Absent	<50	<3	<50	Absent	2000	<50	N	5.5	S
Tomato Relish	Absent	<50	<3	<50	Absent	50*	<50	N	5.5	S
Cranberry	Absent	<50	<3	<50	Absent	100*	<50	N	5.5	S
Garlic Aioli	Absent	<50	<3	<50	Absent	100*	<50	N	1.4	S
Mayonnaise	Absent	<50	<3	<50	Absent	2800	<50	N	1.4	S
Chipotle Southwest	Absent	<50	<3	<50	Absent	600*	<50	N	1.4	S
Thousand island	Absent	<50	<3	<50	Absent	1300	<50	N	1.4	S
Ranch	Absent	<50	<3	<50	Absent	1000	<50	N	1.4	S
Garlic Sauce	Absent	<50	<3	<50	Absent	<5000	<50	N	6.6	S
Verde Sauce	Absent	<50	<3	<50	Absent	<50	<50	N	6.3	S
BBQ Sauce	Absent	<50	<3	<50	Absent	<50	<50	N	5.2	S
Red Chilli Sauce	Absent	<50	<3	<50	Absent	500*	<50	N	4.5	S

Sample Description	*Salmonella spp*	Coagulase Positive Staph	*E.coli*	*B. cereus*	*L. monocytogenes*	SPC	*C. perfringens*	Made on site?	Temperature	Assessment
Chipotle	Absent	<50	<3	<50	Absent	<5000	<50	N	5.8	S
Hot Sauce	Absent	<50	<3	<50	Absent	<50	<50	Y	42.6	S
Mushroom Sauce	Absent	<50	<3	<50	Absent	350*	<50	N	36.5	S
Garlic Sauce	Absent	<50	<3	<50	Absent	<50	<50	N	34.8	S
Gravy Sauce	Absent	<50	<3	<50	Absent	140000*	<50	Commercial product: made on site	67.3	S
Pepper Sauce	Absent	<50	<3	<50	Absent	650*	<50	N	39.6	S
Sesame oil sauce	Absent	<50	<3	<50	Absent	<50	NRP	N	17	S
Pizza Sauce	Absent	<50	<3	<50	Absent	50*	NRP	N	1.8	S
Napoli Sauce	Absent	<50	<3	<50	Absent	1200*	NRP	N	2.3	S
Bolognese	Absent	<50	<3	<50	Absent	100*	NRP	N	2	S
White wine cream sauce	Absent	<50	<3	<50	Absent	950*	NRP	N	3.4	S
Salad dressing	Absent	<50	<3	<50	Absent	10000*	<50	NR	5	S
Chilli jam	Absent	<50	<3	<50	Absent	150*	<50	NR	4.8	S
Sweet chilli & lime aioli	Absent	<50	<3	<50	Absent	650*	<50	NR	5	S
Hommus	Absent	<50	<3	<50	Absent	39000*	<50	NR	4.4	S
Caesar dressing	Absent	<50	<3	<50	Absent	350*	<50	NR	3.7	S
Aioli	Absent	<50	<3	<50	Absent	3100*	<50	NR	7.2	S
Tartar sauce	Absent	<50	<3	<50	Absent	50*	<50	NR	8.3	S
Ranch	Absent	<50	<3	<50	Absent	<50	<50	NR	15	S
Aioli	Absent	<50	<3	<50	Absent	2100*	<50	NR	12.1	S
Garlic crème sauce	Absent	<50	<3	<50	Absent	150*	<50	NR	NR	S
Chipotle sauce	Absent	<50	<3	<50	Absent	100*	<50	N	NR	S
Basil sauce	Absent	<50	<3	<50	Absent	<50	<50	N	NR	S
Red chilli sauce	Absent	<50	<3	<50	Absent	50*	<50	N	NR	S
Garlic sauce	Absent	<50	<3	<50	Absent	<50	<50	N	NR	S

Sample Description	*Salmonella spp*	Coagulase Positive Staph	*E.coli*	*B. cereus*	*L. monocytogenes*	SPC	*C. perfringens*	Made on site?	Temperature	Assessment
BBQ sauce	Absent	<50	<3	<50	Absent	<50	<50	N	NR	S
Aioli	Absent	<50	<3	<50	Absent	5000*	<50	NR	NR	S
Coleslaw sauce	Absent	<50	<3	<50	Absent	100*	<50	NR	NR	S
Mango chutney	Absent	<50	<3	<50	Absent	50*	<50	NR	NR	S
French dressing	Absent	<50	<3	<50	Absent	5000*	<50	NR	NR	S
Balsamic	Absent	<50	<3	150	Absent	100*	<50	NR	NR	M
Peri peri	Absent	<50	<3	<50	Absent	<50	<50	Y	NR	S
Herb mayonnaise	Absent	<50	<3	<50	Absent	300*	<50	Y	NR	S
Salsa	Absent	<50	<3	<50	Absent	850*	<50	Y	NR	S
Hommus	Absent	<50	<3	<50	Absent	150*	<50	Y	NR	S
Pesto	Absent	<50	<3	<50	Absent	200000	<50	Y	NR	S
Lemon curd	Absent	<50	<3	<50	Absent	500*	<50	Y	NR	S
Gremolata	Absent	<50	<3	<50	Absent	25000*	<50	Y	NR	S
Harissa	Absent	<50	<3	230000	Absent	230000	<50	Y	NR	PH
Balsamic	Absent	<50	<3	50	Absent	650*	<50	Y	NR	M
Mayo	Absent	<50	<3	<50	Absent	1900	<50	Y	NR	S
Mushroom sauce	Absent	<50	<3	<50	Absent	12000000*	<50	Y	11.1	U
Lamb ragu	Absent	<50	<3	<50	Absent	600*	<50	Y	8.9	S
Sausage ragu (Pork)	Absent	<50	<3	<50	Absent	1400*	<50	Y	6.9	S
Vegetable sauce	Absent	<50	<3	<50	Absent	2800	<50	Y	6.5	S
Octopus sauce	Absent	<50	<3	<50	Absent	4700	<50	Y	3.9	S
Aioli (egg Based)	Absent	<50	<3	<50	Absent	11000000*	<50	Y	10.7	U
Poppy seed sauce	Absent	<50	<3	<50	Absent	50*	<50	Y	18.4	S
Cocunut base sauce	Absent	<50	<3	<50	Absent	<50	<50	Y	14.7	S
Tartare Sauce (egg Based)	Absent	<50	<3	<50	Absent	<5000	<50	Y	16.6	S
Aioli-straight (egg Based)	Absent	<50	<3	<50	Absent	5800	<50	Y	11.6	S
Yoghurt base (no egg)	Absent	<50	<3	<50	Absent	9000000*	<50	Y	12.5	S

Sample Description	*Salmonella spp*	Coagulase Positive Staph	*E.coli*	*B. cereus*	*L. monocytogenes*	SPC	*C. perfringens*	Made on site?	Temperature	Assessment
Harissa yoghurt	Absent	<50	<3	100	Absent	55000000	<50	Y	3.2	M
Jalepeno lime	Absent	<50	<3	100	Absent	5000*	<50	Y	8.4	M
Aioli	Absent	<50	<3	<50	Absent	150*	<50	Y	14.6	S
Tartare	Absent	<50	<3	3000	Absent	5000*	<50	Y	6.8	U
Hollandaise	Absent	<50	<3	<50	Absent	150*	<50	Y	33.9	S
Mango lime relish	Absent	<50	<3	<50	Absent	650*	<50	Y	8.8	S
Red wine jus	Absent	<50	<3	<50	Absent	300*	<50	Y	5.7	S
Napoli sauce	Absent	<50	<3	<50	Absent	1200*	<50	Y	12.2	S
Chocolate sauce	Absent	<50	<3	<50	Absent	50*	<50	Y	10	S
Cranberry jus	Absent	<50	<3	<50	Absent	50*	<50	Y	7.8	S
Vinaigrette	Absent	<50	<3	<50	Absent	<50	<50	Y	NR	S
Horse radish	Absent	<50	<3	<50	Absent	14000	<50	Y	NR	S
Blue cheese dressing	Absent	<50	<3	<50	Absent	15000000	<50	Y	NR	S
Lemon curd	Absent	<50	<3	<50	Absent	<50	<50	Y	NR	S
Honey dressing	Absent	<50	<3	<50	Absent	50*	<50	Y	NR	S
Harissa(Resample)	NP	NP	NP	130000	NP	NP	NP	Y	5.3	PH

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

Assessments: S = Satisfactory U = Unsatisfactory, M = Marginal, PH = Potentially Hazardous, according to the Categories of Microbiological Quality in the Ready to Eat Guidelines by FSANZ.