

**MICROBIOLOGICAL QUALITY OF  
DRIED SEEDS, DUKKAH AND SPICES**  
April – July 2012

# ACT HEALTH PROTECTION SERVICE



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## BACKGROUND/OBJECTIVE

The dried seeds, dukkah and spices survey is intended to provide information on the microbiological status of these foods in the ACT. These foods are defined for this survey as dried seeds, dukkah and spices used to season other food groups. The dried seeds, dukkah and spices survey was under taken for the following reasons:

- determine the bacteriological status of dried seeds, dukkah and spices products available in the ACT
- determine the compliance of these products to Australia New Zealand Food Standards Code (the Code) and Food Standards Australia New Zealand (FSANZ) Guidelines for the Microbiological Examination of Ready-to-Eat Foods 2001
- compliment Health Protection Service (HPS) audits of high-risk food producing/handling establishments.

## STANDARDS

Standard 1.6.1 of the Code “Microbiological Limits for Food”, a zero tolerance standard is set for salmonellae in pepper, paprika and cinnamon other spices or seeds are not covered by this standard. FSANZ Ready-to-Eat (RTE) Guidelines was used to assess spices and seeds not covered by the Code. *Escherichia coli* (*E. coli*) was also included to assess hygiene. FSANZ Ready-to-Eat (RTE) Guidelines identify four categories of microbiological quality ranging from satisfactory to potentially hazardous. Table 1 details the recommended guideline value. This table 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 (CFU per gram)			
	Satisfactory	Marginal	Unsatisfactory	Potentially Hazardous
<b>Indicators</b>				
<i>E. coli</i>	<3	3-100	>100	**
<b>Pathogens</b>				
<i>Salmonella</i> spp.	not detected in 25g			detected

NOTE:

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

## SURVEY

The survey was conducted between 16 April and 6 July 2012. During this period 31 samples from 12 ACT retail outlets were collected randomly by HPS Officers and processed by the HPS Laboratory. The samples were collected in such a manner as to cover a wide range of the available dried seeds, dukkah and spices products. All of the samples were tested for the hygiene indicators *E.coli* and the food pathogen *Salmonella* spp. The survey collected multiple samples from single outlets and in general outlets were only tested once.

Marginal results may be re-sampled; this is dependent on resources as these foods are still considered compliant. Where the HPS identifies non compliance issues in food businesses, corrective actions are addressed through a graduated and proportionate response. Unsatisfactory results are re-sampled; if the food item is not available other food items may be tested.

## MICROBIOLOGICAL METHOD OF ANALYSIS

Samples were tested for the presence of:

- *E. coli* using AS 5013
- *Salmonella* species using AS 5013 (modified).

The sample preparation for *E. coli* consisted of 25g of sample being homogenised with 225mL of 0.1% peptone diluent; with subsequent serial dilutions prepared for enumeration.

***E.coli* enumeration:** Pour plates of 1ml of  $10^{-1}$  dilution were prepared in triplicate on TBX medium and incubated at 37°C/4 h followed by 44°C/20 h. Confirmed *E. coli* colonies appear blue/green after incubation.

***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 4h. DNA was extracted from 200uL of enriched BHI. This was screened for the presence of *Salmonella* using a BAX System *Salmonella* PCR Assay. No confirmation testing was performed as there were no samples that screened positive.

## RESULTS / DISCUSSION

### *E. coli*

All 31 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. Ideally *E. coli* should not be detected and as such a level of <3 cfu/g has been set for satisfactory samples. Thirty (96.8%) samples had <3 cfu/g of *E. coli* and met the satisfactory criterion. A marginal level of *E. coli* was detected in one sample (Almond Dukkah). The Almond Dukkah re-sample met the satisfactory criterion.

### *Salmonella* spp.

*Salmonella* spp. was not detected in any of the 31 samples tested. RTE foods should be free of *Salmonella* spp. as consumption of food containing this pathogen may result in food borne illness.

## CONCLUSION

The microbiological quality of the dried seeds, dukkah and spices surveyed in the ACT is very good. Raw results of analysis are attached at Appendix A.

## BIBLIOGRAPHY

1. Guidelines for the microbiological examination of ready-to-eat foods FSANZ Dec 2001.
2. Australia New Zealand Food Standards Code Standard 1.6.1.

## Appendix A

Assessment: S = satisfactory, M = marginal, U = unsatisfactory and \* = estimate count only.

Sample Description	<i>E. coli</i> count in food (CFU/g)	<i>Salmonella</i> in food (P/A in 25g)
Pistachio Dukkah	<3	Absent
Almond Dukkah	3*	Absent
Chicken Rub	<3	Absent
Tex Mex Seasoning	<3	Absent
Sushi Rice Seasoning	<3	Absent
Season Morrocco	<3	Absent
Meat Rub	<3	Absent
Sunflower, pepita and pinenut	<3	Absent
Sesame seeds	<3	Absent
Pistachio Dukkah	<3	Absent
Sushi Rice Seasoning	<3	Absent
Almond Dukkah	<3	Absent
Pistachio Dukkah	<3	Absent
Rice Seasoning (Katsuo Fumi Furkake)	<3	Absent
Pattu Mustard Seeds	<3	Absent
Raji Seed	<3	Absent
Kollu Seeds	<3	Absent
Almond Dukkah	<3	Absent
Pistachio Dukkah	<3	Absent
Dukkah Macadamia	<3	Absent
African Grill Dukkah	<3	Absent
Toasted Sesame Seeds	<3	Absent
Dried Vathals (Curd Chilli)	<3	Absent
Sumak Powder	<3	Absent
Garam Masala Whole	<3	Absent
Desicated Coconut	<3	Absent
Sage Fascomilo	<3	Absent
Harissa	<3	Absent
Crushed Chillies	<3	Absent
Hot Dried Chillies	<3	Absent
<i>Almond Dukkah</i>	<3	<i>Absent</i>

Results in *italics* are re-samples.