

ACT HEALTH PROTECTION SERVICE

**INCIDENCE OF SALMONELLA
IN RAW FISH FILLETS**

JULY – SEPTEMBER 2004

Report prepared by Geoff Millard and Simon Rockliff

OBJECTIVE

To determine the incidence of *Salmonella* species

- in retail raw fish fillets available in the ACT; and
- a small number of wholesale Ling fish fillets.

BACKGROUND

In the early months of 2004 there was an increase in the incidence of *Salmonella typhimurium* 197 (STM197) clinical cases across Australia (1). In April 2004 there were five reported cases of STM197 in the ACT, four of these cases had visited a particular restaurant. Food samples taken by Environmental Health Officers from the premise revealed STM 197 in a frozen Ling fish fillet. This isolation raised the question of what is the prevalence and significance of *Salmonella sp* in raw fish fillets in Australia. Apart from the Heinitz paper (2) the literature on the subject is limited and not generally quantitative.

The literature indicates that fish can carry *Salmonella sp*, particularly if they are caught in areas contaminated with faecal pollution. Deep-sea fish are generally *Salmonella sp* free but susceptible to contamination post-catch (4).

Australian data from Medical Diagnostics Unit in Melbourne indicates that *Salmonella sp* are uncommon in fish while *Salmonella typhimurium* strains are very uncommon (1). The Australian Quarantine Inspection Service (AQIS) does not require testing for *Salmonella sp* in imported fish and Food Standards Australia New Zealand (FSANZ) considers the public health risk posed by the presence of *Salmonella sp* in fish as low. This estimate takes into account the severity of any adverse health effect resulting from the presence of *Salmonella sp* in the fish fillet, together with the likelihood of that adverse health effect occurring (3).

SURVEY

This survey was conducted between the 7 July and 29 September 2004. During this period a total of 108 retail fish fillet samples from 17 different retail outlets were collected. The 17 outlets represented a cross-section of the major retailers in the ACT. The samples consisted of 44 predominantly marine species of fish; see Table 1. An additional 12 samples of frozen Ling fish fillets were collected directly from ACT wholesalers. All of the samples were collected by ACT Environmental Health Officers and processed by the Microbiology Unit of the ACT Government Analytical Laboratory.

Table 1

Species of Fish	Number of samples collected
Atlantic Salmon	2
Barramundi	6
Basa (fresh water)	1
Blue Eyed Cod	3
Blue Grenadier	1
Blue Warehou	1
Boar fish	1
Bream	2
Brim	1
Deep Sea Bream	1
Deep Sea Perch	1
Dory	1
Flake	5

Species of Fish	Number of samples collected
Flathead	8
Gem Fish	3
Haki	1
Hiramosa King Fish	1
Hoki	1
John Dory	1
King Fish	1
Ling Fish	11
Mackeral	1
Marlin	2
Nile Perch	3
Ocean Perch	1
Orange Roughy	1
Pacific Dory	1
Perch	1
Rainbow Trout	4
Red Fish	3
Red snapper	1
Salmon	10
Sardine	2
Sea Bream	1
Silver Dory	4
Snapper	2
Spanish Mackeral	2
Sushi Tuna	2
Sword Fish	4
Tuna Albue	1
Warehou	2
Whiting	2
Yellow Fin Tuna	2
TOTAL	108

STANDARDS

The Food Standards Code does not have a level for *Salmonella sp.* in raw fish fillets.

RESULTS

Salmonella sp. was not isolated from any of the 108 samples tested. The twelve extra samples of Ling fish fillets taken at the wholesaler end of the market were also negative for *Salmonella sp.*

CONCLUSION

This short survey has filled a data gap in our knowledge. The absence of *Salmonella sp* indicates that the prevalence of *Salmonella sp* in retail raw fish fillets in the ACT is very low.

BIBLIOGRAPHY

- (1) Personal communication with Joan Powling of Microbiological Diagnostic Unit, Melbourne University.
- (2) Heinitz M.L., Ruble R. D., Wagner D.E., and Tatini S.R. Incidence of *Salmonella* in Fish and Seafood. *Journal of Food Protection* Vol .63, No5 pp579-592
- (3) Anonymous, A Risk Ranking of Sea Food in Australia, FSANZ, 2003
- (4) Jay S., Grau F.H., Smith K., Lightfoot D., Murray C. and Davey G.R. 1997. *Salmonella*, in *Foodborne Microorganisms of Public Health Significance*. (A.D. Hocking, G. Arnold, I. Jenson, K. Newton and P. Sutherland, Eds.) Australian Institute of Food Science and Technology (NSW Branch) Food Microbiology Group, AIFST, Sydney, Australia.