Title: Distribution and expression of the 14 kDa fimbrial gene among Salmonella Enteritidis isolates and potential as diagnostic and epidemiological tools
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The poultry and egg industries have been implicated as a major reservoir of *Salmonelle enterica* serovar Enteritidis phage type 4, the strain associated with major outbreaks of non-typhoid salmonellosis in humans. Consequently, rapid methods that identify contaminated foods are both desirable and necessary to locate the source and route of spread of the infection.

Prior evidence that relates to characterisation of fimbrial antigens expressed by *S.* Enteritidis suggested that SEF14 might be unique to this pathogen. Recent work by Ieva Kotlarski (Dept. Microbiology and Immunology, University of Adelaide) resulted in isolation of a number of monoclonal antibodies that react with a 14 kDa protein expressed by *S.* Enteritidis strain 11RX.

This project aimed to capitalise on prior work and develop a novel strategy for rapid identification of *S.* Enteritidis in egg and egg products. Over 12 months (1993-1994) it examined the distribution and diagnostic potential of the gene sequences encoding a 14 kDa fimbrial protein produced by *S.* Enteritidis, among Australian isolates of this pathogen.

The presence and distribution of gene sequences encoding the SEF14 fimbrial gene was determined by Polymerase Chain Reaction (PCR) amplification of a 526 bp DNA fragment internal to *sefA* using oligonucleotide primers identified from available Genbank sequence data. Expression of SEF14 fimbriae by *S.* Enteritidis cultures was examined using standard immunoblot procedures.

The results of this small study demonstrated that a section of the *sefA* gene can be reliably amplified from *S.* Enteriditis strains and this amplicon can be easily confirmed by simple restriction endonuclease analysis. The primers identified could be incorporated into any of the new PCR detection based technologies currently available. Further work to determine base sensitivity and whether the method needs to be applied to enriched cultures was recommended.

Similarly, this study has shown that monoclonal antibodies directed at the SefA protein could also be integrated into current immunological technologies as a rapid detection method either as the basis of direct immunofluorescent microscopy on raw or enriched culture material, or as the basis for ELISA based methods.