Investigation of *Salmonella* Contamination of Pigs in Australia

Phillip R. Widders, Kaye J. Coates, Ian R. Morgan, and Andrew Pointon*

*Victorian Institute of Animal Science, Melbourne, Australia*

*South Australian Research and Development Institute, Adelaide, Australia*

Microbiological surveys of pigs before, during and after slaughter and processing have been conducted at abattoirs in Australia, to estimate the incidence and risk factors for *Salmonella* contamination on carcasses. In one such survey, approximately 10% of carcasses were positive for *Salmonella* contamination at the end of the slaughter line, although there was considerable variation between abattoirs and between herds in the incidence of contamination. A range of *Salmonella* serotypes was recovered from carcasses, with the most common being *S. derby*, *S. give*, *S. anatum*, and *S. ohio*. The incidence of *Salmonella* contamination on carcasses varied along the slaughter line: some contamination on the skin surface of carcasses survived scalding and dehairing, despite the temperatures achieved during these processes.

Analysis of risk factors associated with *Salmonella* contamination on carcass surfaces following slaughter indicated that the source of pigs, transport time and distance, lairage time, and intestinal carriage of *Salmonella* influenced the incidence of carcass contamination.

As an extension to the survey of *Salmonella* contamination on carcass pigs, the pig industry in Australia has commissioned a nationwide program to enhance the microbiological quality of pig meat. One of the aims of the Pig Meat Hygiene Program is to determine baseline levels for contamination of carcasses and fresh meat, at abattoirs and retail outlets in the major metropolitan centres in Australia, with respect to the following organisms: quantitative assessment for total viable counts (at 5°C and 25°C), total coliforms, *Campylobacter jejuni/coli*, *Pseudomonas* spp (fresh meat only), and qualitative assessment for *Salmonella* spp, coagulase positive *Staphylococcus aureus*, *Yersinia* spp, *Listeria monocytogenes*, and verotoxigenic/enterohaemorrhagic *E. coli*. Training programs have been developed, and are being conducted throughout Australia, for meat processors and QA managers to improve processing techniques that influence microbiological quality. In addition, it is proposed that a *Salmonella* ELISA will be investigated under Australian conditions, to determine its value as a tool for reducing the entry of *Salmonella* into abattoirs by way of intestinal infection in pigs, thereby reducing the level of carcass contamination following slaughter.

Also as part of the Pig Meat Hygiene Program, HACCP protocols are being developed for the production and processing of pigs, by means of a collaborative process involving researchers, industry and regulatory agencies. The aim of this approach is to develop effective and practical methods for assuring, and enhancing, the microbiological quality of carcass and pig meat throughout the industry in Australia.