

## Abstract

Sri Lanka has a greater dependence on fish and fishery products in terms of nutrition and health, income, employment and foreign exchange earnings. The state owned Ceylon Fisheries Corporation (CFC) holds about 3% of the domestic fish market in Sri Lanka. Fish with pathogenic bacteria result in severe, chronic or fatal health consequences for the population and reduced economic productivity for the country. Therefore, it is essential that the various microbiological hazards associated with the market retailing of seafood are identified and quantified. Present study was conducted to determine and quantify the occurrence of various types of microorganisms in fish marketed in CFC retail outlets in Colombo district. The microbiological analysis consisting of examination for aerobic plate count (APC), total coliforms, faecal coliforms, *Escherichia coli*, *Salmonella* spp. and *Staphylococcus aureus*, were performed according to Sri Lanka Standards (SLS) manuals using Oxoid (UK) brand dehydrated media. The results were compared with microbiological limits recommended by International Commission on Microbiological Specification for Foods (ICMSF) for fresh and frozen fish. The APC of fish samples were in the range of  $4 \times 10^3$  -  $4 \times 10^7$  CFUg<sup>-1</sup> and 48.48% of the samples met the standard. Total coliforms and faecal coliforms were in the range of 0 - >1100 MPNg<sup>-1</sup> and, 30.30% and 27.27% of the samples exceeded the standards, respectively. 57.58% of the samples were up to the standard for *E. coli*. *Salmonella* was detected in 21.21% of the samples. However, all the samples were negative for *S.aureus*. According to the results, the fish sold at CFC outlets in Colombo district is microbiologically unfit for human consumption. Still, low disease outbreaks are reporting due to the traditional cooking habits of Sri Lanka. The risk factors associated with high levels of microbial contamination within the outlets were time-temperature abuse, mixing of fish species in storage, re-using of ice and inadequate use of sanitizers for cleaning. Absence of *Staphylococcus aureus* in fish indicated the good hygienic status of workers. The results also highlight the importance of strict adherence to Good Manufacturing Practices (GMPs), from harvesting of fish to retailing, to obtain a product with a better microbiological quality.

**Key words: Microbiological quality, Pathogenic bacteria, Domestic fish markets, Ceylon Fisheries Corporation (CFC), Colombo district**