

The performance of food safety management system in relation to the microbiological safety of salmon nigiri sushi: a multiple case study in a Japanese chain restaurant

ABSTRACT

The study's objective was to evaluate the performance of the food safety management system (FSMS) in relation to the microbiological food safety (FS) output of Salmon Nigiri Sushi in the selected outlets of a Japanese chain restaurant. Two outlets that are FSMS certified with ISO 22000 and two outlets that are FSMS not certified with ISO 22000 were selected. Microbiological Assessment Scheme was used in the study of evaluating the performance of the FSMS, in which samples were collected from the selected critical sampling locations and analysed for *Bacillus cereus*, *Vibrio parahaemolyticus*, *Listeria monocytogenes*, *Escherichia coli*, *Staphylococcus aureus*, Coli- form, Total Plate Count (TPC), and Yeast and Mould Count. The microbial counts were compared against the relevant established acceptance criteria to determine FS level and consequently calculate the FS output. The overall FS output of the two outlets that are non-ISO 22000-certified FSMS was 2–3 (moderate to a good level) and 2 (moderate level) in contrast to ISO 22000-certified FSMS outlets that was 2–3 (moderate to a good level) and 1 to 2 (poor to a moderate level). None of the outlets was able to achieve their FS objectives. *Bacillus cereus*, *Vibrio parahaemolyticus*, and *Listeria monocytogenes* were not detected, and therefore, the FS level was determined at level 3 (good result) for all outlets. The FS level for TPC and *E. coli* was determined at level 1 (low result) due to high *E. coli* counts (even in filtered tap water), which lead to ineffectiveness in cleaning and sanitation of food contact surfaces, including hand washing. It appeared the performance of FSMS in relation to the microbiological FS outputs of Salmon Nigiri Sushi of outlets that are non-ISO 22000-certified FSMS were better than outlets that are ISO 22000-certified FSMS.

Keyword: Microbiological food safety output; Salmon nigiri sushi; Critical sampling locations; Japanese chain restaurant; Food safety management system