

Controlling histamine forming and spoilage bacteria on fish contacting surfaces by using selected commercial disinfectants

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The presence of bacteria on fish contacting surfaces possesses a risk of cross contamination of fish and reducing their quality. Therefore, this study was aimed to evaluate anti-microbial activity of selected commercial disinfectants used in the fish processing factories and some multiday fishing boats against *Klebsiella aerogenes*, *Morganella morganii* and *Pseudomonas* spp. which were isolated from fish contacting surfaces. *K. aerogenes* and *M. morganii* are known as high histamine formers and *Pseudomonas* spp. is considered as a spoilage bacterium although they form low amounts of histamine. A quantitative suspension test was used to assess the efficacy of selected disinfectants following an exposure time of 5 minutes at different concentrations. Disinfectants used in this study contained triclosan (A), quaternary ammonium compounds (B), hydrogen peroxide (C) and sodium hypochlorite (D) as active agents. Bacterial suspensions were prepared by transferring 18 hours of bacterial cultures into Trypticase Soy Broth (TSB) to obtain a five-hour log phase culture to achieve a microbial population of 10⁶ - 10⁸ CFU/mL. Cultures were transferred to tubes containing test products and kept for 5 minutes. After the exposure time, 1 mL of each challenged sample was added to 9 mL of neutralizing broth tubes and plated on Trypticase Soya Agar (TSA). Plates were incubated at 37°C for 24 hours. Product A with triclosan did not show much inhibition. Products B, C and D showed <10 CFU/mL counts for the manufacturer recommended concentrations (i.e., A-5%, B -0.1%, C-0.5% and D-5%) with a >5 log₁₀ Reduction Factor (RF). Comparison of RF of each disinfectant revealed that there is a significant difference (p<0.05) between A and other disinfectants (B, C, D). The bacterial counts were increased with the decreasing concentrations of the disinfectant. According to obtained results, commercial disinfectants with quaternary ammonium compounds (20-25%), hydrogen peroxide (8-35%) and sodium hypochlorite (5-10%) can be recommended to clean fish contacting surfaces to minimize contaminations rather than cleaning with detergents alone.

Keywords: disinfectants, fishery industry, *Morganella morganii*, *Klebsiella aerogenes*, *Pseudomonas* spp.

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