

89A-18

Optimization of ozonated water treatment to improve product quality, safety and shelf life of domestic wild-caught shrimp

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The U.S. domestic shrimp industry faces an economic crisis due to the high volume of low priced, pond-raised imports. High product quality is a critical priority for seafood processors to increase consumption and profitability while decreasing discards. Ozone is a FDA-approved oxidizing agent for direct food contact and is widely used in the food processing industry to sanitize processing surfaces and food products including vegetables, fruits, ready-to-eat and raw meats, fish and eggs. The goal of this research is to evaluate the use of dissolved ozone as a sanitizer in shrimp processing and determine an optimal time-concentration for product treatment. Peeled shrimp meat samples were treated with ozonated water (at 50° F) by either soak or spray applications. Three different ozone concentrations (1, 2, and 3 ppm) with three different contact times (20, 40, and 60 seconds) were used for each of the two application types. Treated shrimp samples were then evaluated for microbial reduction of both general spoilage bacteria (Aerobic Plate Counts) and for *Pseudomonas* species. The samples were also evaluated for moisture content and lipid oxidation using the TBARS test. At lower concentrations application time did not significantly affect microbial destruction, and the soaking treatment resulted in greater bacterial reduction than the spray treatment of peeled shrimp meat. At 3 ppm dissolved ozone, application type and duration significantly affected the reduction of bacteria in the shrimp samples. Dissolved ozone applied at 3 ppm did not increase TBARS values in peeled shrimp meat. These results suggest that application of ozonated water at the higher concentrations and contact times studied can significantly reduce the microbial content of peeled shrimp meat. This outcome supports the enhanced use of ozonated water treatment by the shrimp industry and will facilitate continued investigation into improved shelf life and safety of shrimp meat.

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