

Title Efficacy of acidified sodium chlorite in extending storage stability of rainbow trout (*Oncorhynchus mykiss*) fillets

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### Abstract

Fish are highly perishable, and post-mortem autolytic and microbiological changes reduce the storage stability of these products. This perishability necessitates development of interventions to extend shelf-life and preserve product quality. The objective was to study the efficacy of ASC, at approved and higher concentrations, to extend the storage stability of rainbow trout fillets. The ASC solution was prepared by mixing equal volumes of Sanova Actvator<sup>®</sup> and Sanova<sup>®</sup> base. Fillets were placed in an agitating ASC solution for 30 s and allowed to drain for 10 s. Subsequently, fresh fillets were placed on Styrofoam trays and over wrapped with polyvinyl chloride film. Fillets were stored at 1-2 °C for 0, 8 and 15 d. Four intervention treatments include control, water, 50 ppm ASC, and 1000 ppm ASC. A significant interaction ( $p < 0.05$ ) of treatment and storage time was observed for psychrotrophic counts. The increase in psychrotrophic counts was less for fillets treated with ASC. Aerobic plate counts were not affected ( $p > 0.05$ ) by intervention; however, a significant increase in counts was observed during storage ( $p < 0.05$ ). Fillet pH, moisture, fat, TBARS, fatty acid composition, color, cook yield, and shear force were not affected ( $p > 0.05$ ) by intervention. TBARS decreased ( $p < 0.05$ ) during storage. When expressed as a percent of all fatty acids quantified, percentages of individual fatty acids were constant, with the exception of C15 and C20:2. Fat content, L\*, b\* and cook yield increase ( $p < 0.05$ ) during storage. Fillet pH, moisture, a\* value, and shear force did not change ( $p > 0.05$ ) with storage to 15 days. Based on these data, 50 ppm ASC performed equally as well as 1000 ppm ASC. The utility of ASC may be as a decontaminant; however fillets in this study had initial low psychrotrophic counts pre- ( $2.3 \log_{10} \text{CFU/cm}^2$ ) and post treatment ( $2.03 \log_{10} \text{CFU/cm}^2$ ) with ASC.