ISSN 3051-4657
Proceedings of the 02nd Symposium on Ocean and Freshwater Systems (SOFS) – 2024
Faculty of Fisheries and Marine Sciences & Technology, University of Ruhuna, Sri Lanka.

Comparison of the impact of storage strategies on the postharvest quality of giant freshwater prawns through a sensory evaluation

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Abstract

Product quality and shelf life of giant freshwater prawns (GFP) can be influenced by different factors including handling and storing techniques. It determines consumer acceptability and satisfaction, and sensory evaluation provides immediate access to high-quality information from the viewpoint of the customer. Consumer acceptability of GFP stored under different storing techniques and durations were ascertained through sensory evaluation. Fresh GFP purchased at fish landing centers of the Ridiyagama reservoir of Sri Lanka were transported to the laboratory within an hour in flake ice and were arbitrarily divided into three groups. Specimens of the first group was chilled with flake ice, second group was air-blast frozen at -35 ^{0}C for four hours and stored at -20 ^{0}C, and the third group directly frozen at -20 ^{0}C. Sensory evaluation of cooked (at 175°C for 15 min with 1% salt) GFP involved assessing odor, flavor, and texture using a modified QIM scale by a trained panel of ten individuals. The panel rated the overall acceptability of the cooked GFP samples on days 3, 6, 9, 12, 15, 18, and 21 of the storage periods. Significant differences ($p<0.05$) were observed in sensory ratings based on storing condition and duration. The evaluated organoleptic characteristics indicated that the GFP was in very good condition during the first 24 hours on ice; however, its quality gradually diminished over the storage period. Cooked GFP samples were rated as 'good' quality for the first six days, with the quality remaining at an 'acceptable' level for the next three days of ice storage. Blast-frozen GFP maintained "good" condition throughout the entire storing period, whereas -20°C frozen GFP transitioned from good to acceptable quality by day 6 and maintained that level throughout the storing period. Present results indicate that storing GFP in ice is effective for short-term preservation, while blast freezing is the most effective storing technique to maintain the quality over an extended period. Present findings highlight the necessity of identifying the factors reducing postharvest quality during the storage of GFP to ensure high-quality exports.

Keywords

Consumer acceptability, air-blast frozen, organoleptic characteristics, sensory ratings, postharvest quality

Acknowledgement

Australian Centre for International Agricultural Research (ACIAR) grant FIS/2018/157 provided financial support.