

## Effect of Freshness before Freezing on the Quality of Thawed Meat in Japanese Pilchard Landed at Ports in Eastern Hokkaido

○Keisuke Moriya<sup>\*1</sup>, Akiko Miyazaki<sup>2</sup>, Hiroyuki Kodama<sup>3</sup>, Koji Ebitani<sup>3</sup>

1, Food Processing Research Center, Hokkaido Research Organization, 589-4 Midori-machi, Ebetsu, Hokkaido, 069-0836, Japan

2, Abashiri Fisheries Research Institute, Hokkaido Research Organization, 7-8-5, Minato-cho, Mombetsu, Hokkaido 094-0011, Japan

3, Kushiro Fisheries Research Institute, Hokkaido Research Organization, 4-25, Nakahama-cho, Kushiro, Hokkaido 085-0027, Japan

\*Corresponding author: moriya-keisuke@hro.or.jp

Fish with good freshness and quality for sashimi (sliced raw fish) are highly valued because Japanese consumers prefer sashimi. It is well known that freshness of Japanese pilchard (*Sardinops melanostictus*) that is migratory red-flesh fish deteriorates rapidly. The port in eastern Hokkaido is close to the fishing ground of Japanese pilchard, which is advantageous for maintaining the freshness of Japanese pilchard. The purpose of this study was to clarify the freshness of Japanese pilchard just after landing on eastern Hokkaido and the effect of ice storage period prior to freezing on the quality of thawed meat. Japanese pilchard which was landed at ports in eastern Hokkaido stored in ice for different periods (0, 5, 24 h) and then, these fishes were frozen in a liquid freezer. Each frozen pilchard was kept at -20 °C or -40 °C until analysis for 0 or 2 months and then, thawed for 15 h at 2 °C. Japanese pilchard just after landing was considered highly fresh due to K value of  $\leq 4$  % and some of which remained adenosine triphosphate (ATP). The K value of frozen meat of 5 h of ice storage after landing was about  $\leq 5$  %. The maximum strength as a physical property of the thawed meat decreased with ice storage period before freezing. The  $b^*/a^*$  value of thawed dark meat after keeping at -20 °C for 2 months with 0 h of ice storage, or after keeping -40 °C for 2 months with 0-24 h of ice storage were not changed during frozen storage. The pilchards, that were rapid-frozen just after landing or that were rapid-frozen within 5 h after landing and then stored at -40 °C, were suitable for consumption as an ingredient in frozen product for sashimi as they demonstrated good physical properties and insignificant color deterioration post-thawing.

**Keywords:** Freezing, Freshness, K value, Sashimi, Quality