

Comparison of the microbiological, chemical and sensory quality of plaice (*Pleuronectes platessa*) stored in flake ice and slurry ice

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Plaice is a very important fish species in Belgian fisheries with yearly landings between 6000 and 9000 tons. Due to the remote fishing grounds, fishing trips from Belgian fishermen can last up to 10 days. Therefore, as fish is a very perishable food product, rapid cooling on board is essential for the shelf life of fish. The application of slurry ice, consisting of small ice crystals dispersed in seawater, is expected to prolong the shelf life of the fish. This was evaluated by storage of plaice in flake ice (FI) and slurry ice (SI). The quality of plaice was analysed by means of sensory, microbiological and chemical methods.

Plaice was caught in the English Channel in March 2015 by the beam trawler Z571 during a single trip. Plaice was divided into two batches of 50 plaice in SI and FI respectively and stored on board in a cool room. Fish was transported to the laboratory and kept in a refrigerator in each type of ice before analyses were carried out. Sensory (Quality Index Method (QIM), microbiological (Total plate count, H₂S-producing bacteria and *Pseudomonas* spp.) and chemical analyses (pH, TVB-N and TMA) were performed every 2 or 3 days during 18 days.

Temperature of plaice stored in SI decreased from 5,7 °C to 0,3°C in one hour, while it took more than three hours in FI. Using the QIM, no significant differences were detected between the two storage methods. An increase in all microbiological counts was observed over time in FI and SI, reaching a count of 7,08 and 7,40 log CFU/g respectively at the end of storage for H₂S-producing bacteria. TVB-N values reached 28,51 mg/100 g and 34,38 mg/100 g in FI and SI respectively while TMA values reached 15,73 mg/100 g and 22,31 g/100g. Hence microbiological and chemical analyses showed higher values for fish stored in SI than in FI at the end of the storage period, although these differences were not significant. In this experiment, no expected advantages of the use of SI could be demonstrated. Probably, the fast cooling capacity of SI is of limited importance in winter when the temperature of the fish is rather low.

It can be stated that SI is suitable for rapid chilling of plaice on board of commercial trawlers. However, no beneficial effect could be seen on the shelf life of plaice, probably due to low temperature of the fish when caught. Therefore, the experiment could be repeated in summertime.

Key words: shelf life, plaice, slurry ice, flake ice, quality