

Title Enhanced shelf-life of chilled European hake (*Merluccius merluccius*) stored in slurry ice as determined by sensory analysis and assessment of microbiological activity

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### Abstract

Slurry ice, a biphasic system consisting of small spherical ice crystals surrounded by seawater at subzero temperature, was evaluated as a new chilled storage method for whole European hake (*Merluccius merluccius*), a gadoid fish species of remarkable commercial interest, and this method was compared with a control batch stored for 19 days in traditional flake ice. The results obtained in the sensory analysis indicated a significant extension of shelf-life – from 5 days (flake ice batch) to 12 days (slurry ice batch) – in the latter batch, mainly deriving from a better maintenance of both external and fresh odour, the appearance of the gills and consistency. The slurry ice batch exhibited a significantly lower increase in pH as compared to the flake ice batch, this indicating a better control of the former over alkalinising microflora. Thus, significantly lower counts of total aerobes and proteolytic bacteria were also attained in hake muscle stored in slurry ice, microbial numbers reaching average differences of  $\approx 1$  log unit before 12 days of storage and above 2 or 3 log units, respectively, when this period was extended up to 19 days. The formation of total volatile base-nitrogen and trimethylamine were also significantly lower in the slurry ice batch after 12 days of storage. According to the parameters assessed, storage of European hake in slurry ice extends the shelf-life of this species and allows a better maintenance of sensory and microbiological quality.