

Quality enhancement in chilled palm ruff (*Seriolella violacea*) by previous high pressure treatment: Effect of pre- and post-rigor mortis conditions

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ABSTRACT

During fish chilled storage, a relevant deterioration of sensory quality and nutritional value has been detected as a result of chemical constituent changes. Among the different advanced technologies to be applied for marine food preservation, high pressure (HP) processing has been reported to inactivate microbial and endogenous enzymes, while leading to a shelf life increase during a further storage.

The present work was focussed on quality changes of chilled fish that was previously treated with HP technology. For it, palm ruff (*Seriolella violacea*) was chosen as being an abundant small pelagic species, normally considered as an unconventional source of raw material. As previous HP treatment, two different pressure levels (450 and 550 MPa) for 3 min were tested and compared to untreated fish (Control). Additionally, fish corresponding to pre- and post-rigor mortis (RM) catching conditions were taken into account and compared. The study was addressed to chemical constituent changes (i.e., lipids, nucleotides and volatile amines), being analyses carried out after 10 and 12 days of chilled storage.

An inhibitory effect on the quality loss could be observed in all HP-treated samples (pre- and post-RM) when compared to control fish at both chilling times. Thus, all HP batches indicated a lower ($p < 0.05$) development of lipid hydrolysis (free fatty acids formation) and oxidation (tertiary lipid oxidation compounds), a lower ($p < 0.05$) formation of total volatile amines and lower ($p < 0.05$) K values when compared with previously untreated chilled fish. Comparison between pre- and post-RM samples showed a higher quality retention in pre-RM fish in agreement with the assessment of free fatty acids, tertiary lipid oxidation compounds and K value.

As a result, present research shows that previous HP treatment has led to a marked quality enhancement of chilled palm ruff. Further, the employment of this species in pre-RM catching condition would be recommended.