

Title Muscle tissue structure and flesh texture in gilthead sea bream, *Sparus aurata* L., fillets preserved by refrigeration and by vacuum packaging

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Abstract

Fillets were analysed from 66 gilthead sea bream specimens (*Sparus aurata* L). Thirty-six fillets were refrigerated (2 °C). The rest of the fillets were vacuum-packed and refrigerated. Muscle and sensorial parameters were evaluated for 22 days post-mortem.

Textural parameters were higher in early stages. The refrigerated fillets had the lowest values. Most of textural parameters showed a negative correlation with the detachments among fibres in both groups.

Ultrastructural results in vacuum-packed fillets showed that sarcolemma–endomysium was gradually disrupted, with almost a complete loss at 22 days. Initially, the detachments of myofibrils from the sarcolemma–endomysium were scarce. Mitochondria and sarcoplasmic reticulum were swollen from the first stages onwards. From 16 days onwards, the intra-cytoplasmic organelles were significantly altered and the smooth reticulum appeared hypertrophied, indicating an increase of the autophagic mechanisms. Sarcomeres were gradually altered, mainly at the I-band level, which showed a loss of actin filaments and Z-line disruptions from 12 to 16 days onwards.

In non-vacuum fillets the muscle tissue was already markedly altered from the early stages. From five days onwards, the detachments of myofibrils from the sarcolemma were frequent and the hypertrophied smooth reticulum and the degraded lysosomes were already observed.