

Title Combined effect of an oxygen absorber and oregano essential oil on shelf life extension of rainbow trout fillets stored at 4 °C

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Abstract

In the present study the combined effect of an O₂ absorber and oregano essential oil (0.4% v/w) on shelf life extension of rainbow trout fillets (*Onchorynchus mykiss*) stored under refrigeration (4 °C) was investigated. The study was based on microbiological [TVC, *Pseudomonas* spp., Lactic Acid Bacteria, H₂S-producing bacteria including *Shewanella putrefaciens*, Enterobacteriaceae and *Clostridium* spp.), physicochemical (pH, PV, TBA, TVBN and Drip loss) and sensory (odor, taste) changes occurring in the product as a function of treatment and storage time. Aerobically-packaged rainbow trout fillets stored at 4 °C were taken as control samples. Results showed that TVC exceeded 7 log cfu/g on day 4 of storage for control samples, day 7–8 for samples containing oregano oil, day 9 for samples containing the O₂ absorber and day 12–13 for samples containing the O₂ absorber and oregano oil. *Pseudomonas* spp., Enterobacteriaceae and LAB were only partially inhibited by the O₂ absorber and/or the oregano oil. In all cases the inhibition effect was more pronounced when the combination of O₂ absorber with oregano essential oil was used. pH decreased from an initial value of 6.65–6.09 and subsequently increased to 6.86 due to formation of protein decomposition products. % Drip loss ranged between 7% and 11–12% at the end of the product shelf life. PV values ranged between 11.4 and 27.0 meq O₂/kg oil while malondialdehyde (MDA) ranged between 9.6 and 24.5 mg/kg. TVBN ranged between 10.6 and 54.6 mg/kg at the time of sensory rejection. Sensory shelf life was 4 days for the control samples, 7–8 days for samples containing oregano oil, 13–14 days for samples containing the O₂ absorber and 17 days for samples containing the O₂ absorber plus oregano oil.