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Title: (Ariel Bold 12)

A NOVEL STRATEGY FOR IMPROVING QUALITY AND SHELF LIFE OF FARMED RAINBOW TROUT DURING FROZEN STORAGE: DIETARY INTERVENTION WITH ESSENTIAL OILS

Authors & affiliations: (Ariel Bold 10)

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Abstract: (Ariel 11, max 350 words)

During frozen fish storage, changes in chemical constituents may lead to marked quality losses as a result of texture, flavor, and color deterioration and the breakdown of nutritional components. Several strategies have been described to inhibit or at least slow down these changes, allowing sensory and nutritional retention of food. Among them, dietary interventions with different compounds might be a good choice to keep fish quality in aquaculture species, minimizing the need for processing technologies post-mortem. Specifically, essential oil has been lately proposed as components of fish feeding for preserving quality and shelf life, although they have not yet been sufficiently studied especially during frozen storage.

For this reason, the aim of the present work is to evaluate the protective use of an essential oil containing eucalyptol, carvacrole and thymol included in the basal diet of rainbow trout (*Oncorhynchus mykiss*) on the shelf life and organoleptic quality of frozen fish fillets during 6 months of storage at -10°C. The study was carried out by combining the evaluation of organoleptic properties with tools to assay the chemical changes produced in lipids and proteins, particularly by using a novel redox proteomics approach based on labeling protein carbonyls by fluorescein-5-thiosemicarbazide (FTSC), protein separation on gel electrophoresis and protein identification by mass spectrometry.

Results revealed the effectiveness of essential oil in maintaining colour and water holding capacity of frozen fillets as well as in inhibiting lipid and protein damages. As consequence, essential oils managed to delay the onset of lipid oxidation and rancidity of trout fillets by decreasing the generation of lipid oxidation byproducts. Moreover, this antioxidant effect on lipid was accompanied by the inhibition of carbonylation of specific protein targets in both sarcoplasmic and myofibrillar fractions of trout fillets, which was closely correlated to the minor loss of protein solubility and water holding capacity of flesh.

These findings highlight the usefulness of essential oils as novel, safe, inexpensive and simple strategy to enhance fish quality and to extend its shelf life during frozen storage, resulting in high quality products which require less processing post-mortem.

Scientific topic: Innovative technologies and new perspectives for improving and assuring the

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Short oral presentation

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Abstracts should be submitted by e-mail to: wefta2016@pbf.hr (deadline: 24 June)