# ISEKI_Food 2011

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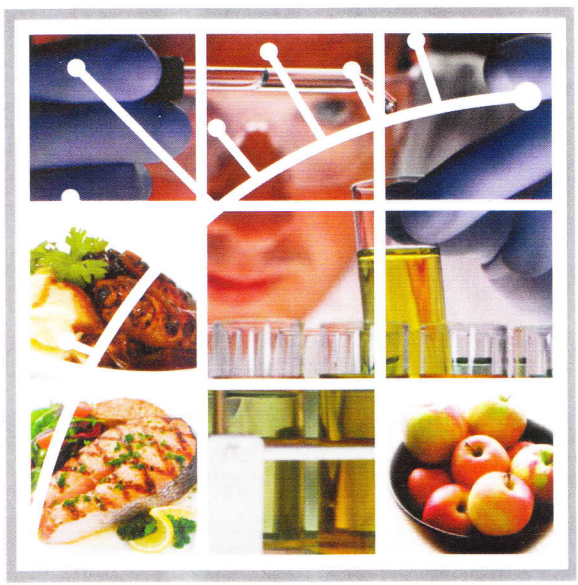

August 31th - September 2nd • 2011 • Milan • ITALY

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# Effects of chilled storage, vacuum and modified atmosphere packaging on quality of meagre, *Argyrosomus regius* (Asso, 1801) fillets: a combined experimental and predictive approach

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Meagre, *Argyrossomus regius* (Asso, 1801), is a highly valuable commercial fish that has good marketing potential due to its size and shape. However, as with other seafood, it is quite perishable. Undoubtedly, modified atmosphere (mixtures of $N_2$, $O_2$ and $CO_2$) and vacuum packaging combined with chilling, prolongs the shelf-life of the product. Our objectives were: to experimentally assess quality changes of meagre fillets air- (AIR) and vacuum-packaged (VP) stored under chilling (+4°C) conditions for 13 days; and, using the experimental results and the models implemented in SSSP v. 3.1 software, to predict the shelf-life of fillets if they are packed under modified atmospheres (MAP) with increasing percentages of $CO_2$.
Microorganisms were counted following standardised (ISO) methods. The Conway method was used to quantify TVB-N and TMA. Colour (*sensu* Hunter L,a,b scale) was determined using a tristimulus colorimeter. Hardness was determined via a compression test using a texturometer. Counts of mesophilic, psycrophilic, and $H_2S$-producing bacteria were significantly ($p<0.05$) lower in VP fillets Values of TVB-N and TMA-N increased slightly during storage but differences between treatments were not significant ($p>0.05$). Fillets' pH increased significantly ($p<0.05$) in AIR and VP on 3rd day and then decreased. No statistical significant changes were observed in colour (i.e. ΔE). On 13th day, fillets were significantly harder than fresh samples.
The shelf-life of meagre fillets was found to be approximately 4.5 days for both AIR and VP. If MAP would be used, shelf-life of the fillets would be 5.5 days with 25 % of $CO_2$, 6.5 days with 50 % of $CO_2$ and 9 days with 100 % of $CO_2$. These finding should be tested experimentally in order to validate the predictions and further studies are needed to find out the exact combination of the gases.

**KEYWORDS:** meagre fillets, quality, vacuum/MAP packaging, shelf-life.

**Acknowledgements:** The experimental work greatly benefited from the help of Engs. Neuza Rodrigues, Clarisse Ramalho, Teresa Soeiro, Teresa Cavaco, Vera Gonçalves and Mrs. Sílvia Madeira at the Department of Food Engineering, University of Algarve Institute of Engineering, and Eng. Carla Mendes, at Continente Hipermercados S.A. Ismail Y. Genç benefited from an Erasmus LLP Training Programme grant.