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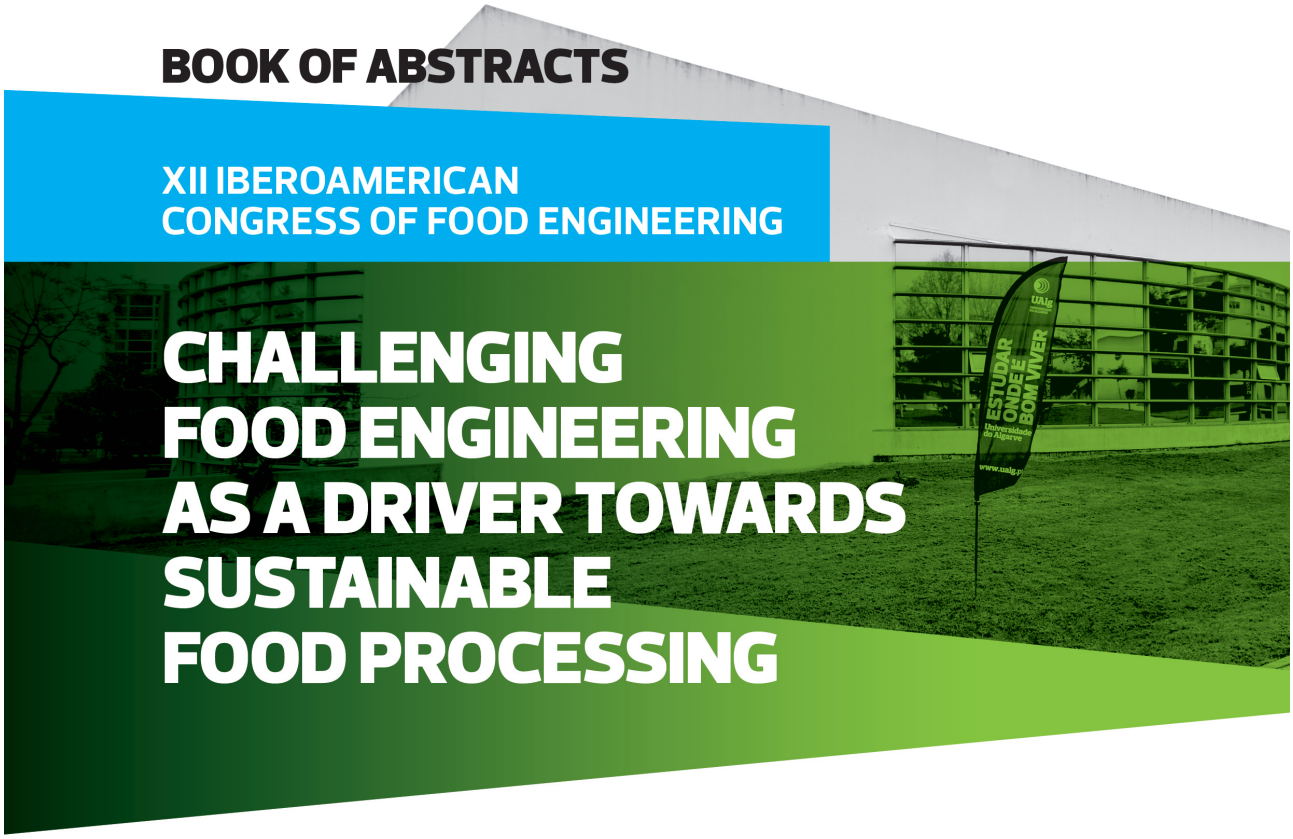

CHALLENGING FOOD ENGINEERING AS A DRIVER TOWARDS SUSTAINABLE FOOD PROCESSING

UNIVERSITY OF ALGARVE, GAMBELAS CAMPUS
FARO / ALGARVE / PORTUGAL
1 > 4 JULY 2019

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"Challenging Food Engineering as a Driver Towards Sustainable Food Processing"

e-Book of Abstracts

Editores

Margarida Vieira

Rui Cruz

Célia Quintas

Gil Fraqueza

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Autores

CRUZ, R. M. S.

FRAQUEZA, G.

QUINTAS, C.

VIEIRA, M. M. C.

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✞ Our colleague Paula Carrasquinho Pires Cabral, PhD in Agro-Industries Engineering, Assistant Professor in the Department of Food Engineering of the Instituto Superior de Engenharia of Universidade do Algarve and researcher at the Center for Biological Resources and Mediterranean Food (MeditBio). She developed and published research in the production of food flavors, Mediterranean diet food and characterization of physicochemical, nutritional and sensory properties of food.

Paula was an active member in the Scientific Committee of the CIBIA XII, having reviewed several abstracts. Unfortunately, she passed away on 31 March of 2019. We will always remember an exceptional teacher, a good and insightful researcher, a hard worker, a resilient colleague, a friend with a huge sense of humor.

We will never forget her!

Effects of depuration on subsequent deterioration and shelf life of cultured grooved carpet shell clam Ruditapes decussatus during chilled storage

FÁBIO MOTA[a], JAIME ANÍBAL[a,b] AND EDUARDO ESTEVES[a,c*]

[a] Departamento de Engenharia Alimentar, Instituto Superior de Engenharia da Universidade do Algarve, Faro, Portugal
[b] Centro de Investigação Marinha e Ambiental – CIMA, Universidade do Algarve, Faro, Portugal
[c] CCMAR Centro de Ciências do Mar, Faro, Portugal

*Corresponding author
eesteves@ualg.pt

The grooved carpet shell clam *Ruditapes decussatus* is one of the most consumed and valuable bivalves in the Mediterranean in terms of both nutrition and market. As with other filter-feeding species there are health risks associated with its consumption and specimens have to be depurated pending assessment of water quality of the environment where they originate. The aim of this study was to examine the effects of depuration on parameters of biological (mortality), commercial/physiological (condition index, CI, and percent edibility, PE), physicochemical (pH and TVB-N content), microbiological (TVC, Enterobacteriaceae and psychrotrophic bacteria) and sensory quality of commercially-sized clams from Ria Formosa (Algarve, south Portugal) stored at chill temperatures.

In Summer, the season of peak clam's consumption, the 'median time to death' t_{50} estimated in the two-parameter logistic model fitted to proportion data of alive depurated and non-depurated clams stored chilled (5ºC) for up to 24 days was similar (13±0.12 vs. 12.1±0.06 days). Moreover, t_{50} of non-depurated, 'natural' clams was found to be much lower in Summer compared to Winter (12.1±0.05 vs. 20.1±0.22 days). In depurated clams, CI decreased, and PE increased steadily during storage, whereas CI and PE of non-depurated clams remained constant (55-61% and 18-20% respectively). pH decreased in the first 1-2 days, markedly in non-depurated clams (from ca. 6 to 5) and then gradually increased to values >7 on days 23-24. Concurrently, TVB-N increased exponentially in both depurated and non-depurated clams, exceeding EU limits by day 20. Initial microbial load was fairly low, 2 to 4 log cfu/g. Expectedly, after depuration microorganisms' abundance decreased, more pronounced (1-2 log cfu/g) in TVC and psychrotrophic bacteria. Subsequently, abundances grew substantially to 5 log cfu/g at day 24. Enterobacteriaceae abundance remained constant till day 20 and then increased sharply. Similar dynamics were found for non-depurated clams but at comparatively higher abundances. In terms of sensory quality, 50% of the panelists rejected the samples (raw and cooked), t_{50}, on days 7-8 of chill storage. Rejection was elicited by marked changes in appearance and odor.

Depuration affected in different ways the level but not the general dynamics of the quality parameters assessed during chilled storage of clams. However, eventual safety issues emerge long after habitual storage time and panelists' sensory rejection.

Keywords: R. decussatus, Depuration, Food quality, Chill storage