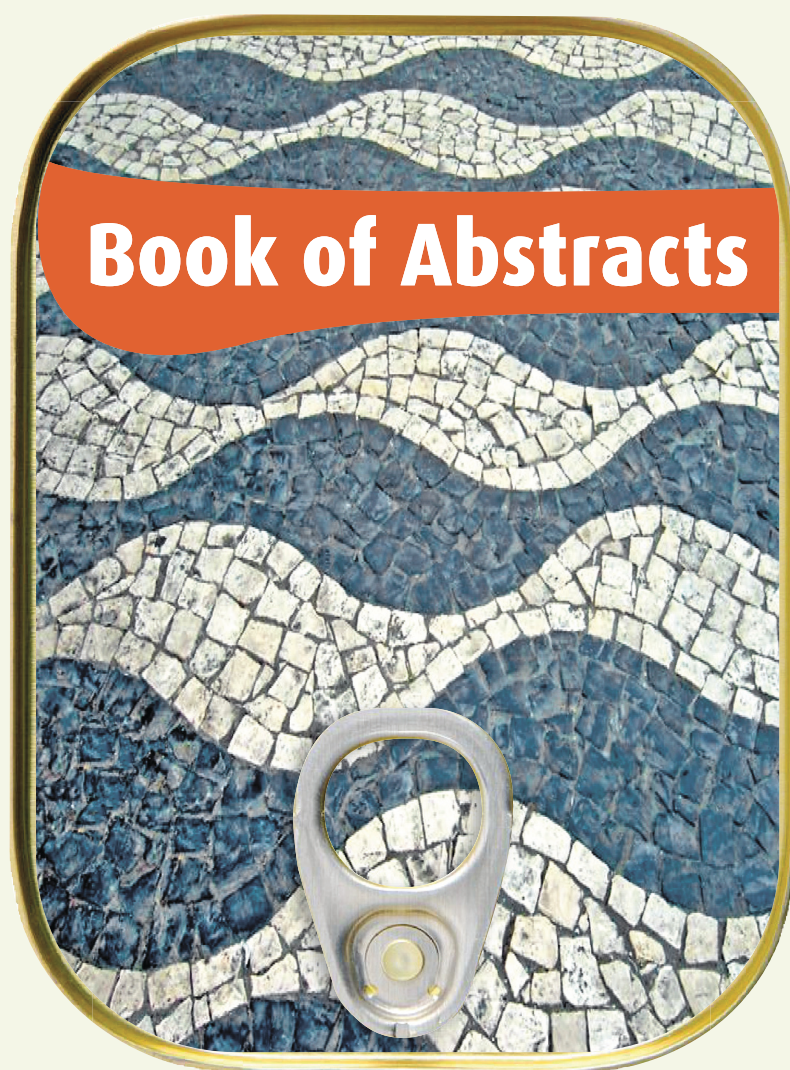


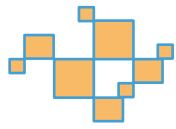
InSIPack

International Conference on Safety
and Innovation in Food Packaging 2016



National Institute of Health Dr Ricardo Jorge
Lisbon, Portugal

16th June 2016



InSI-Pack

International Conference on Safety
and Innovation in Food Packaging 2016

Book of Abstracts

National Institute of Health Dr Ricardo Jorge
Lisbon, Portugal

16th June 2016

Posters - Session 1
Food Safety & Quality

NITROGEN VS ARGON: WHAT IS THE MOST EFFECTIVE ATMOSPHERE FOR SHELF-LIFE EXTENSION OF BUCKLER SORREL LEAVES?

José Pinela^{1,2}, Lillian Barros¹, Amílcar L. Antonio¹, João C.M. Barreira^{1,2}, Ana Maria Carvalho¹, M. Beatriz P.P. Oliveira², Isabel C.F.R. Ferreira¹ *

¹ Mountain Research Centre (CIMO), ESA, Polytechnic Institute of Bragança, Portugal, REQUIMTE/LAQV, Faculty of Pharmacy, University of Porto, Portugal

Buckler sorrel (*Rumex induratus* Boiss. & Reut.) is an underutilized leafy vegetable with peculiar sensory properties and potential as a gourmet food. In the food industry, different packaging methods have been used for shelf-life extension, but it is important to know how the quality of minimally processed vegetable is affected by these treatments. Recently, nitrogen and argon have been used for food packaging. Nitrogen is low soluble in water and other food constituents and does not support the growth of aerobic microbes. In turn, argon is biochemically active and appears to interfere with enzymatic oxygen receptor sites. In this study, modified atmospheres enriched with nitrogen and argon were evaluated for shelf-life extension of buckler sorrel leaves.

Wild samples were gathered in Bragança, Portugal, considering local consumers' sites and criteria. Healthy and undamaged leaves were selected, rinsed in tap water, and a portion was immediately analyzed (non-stored control). The remaining fresh material was packaged in polyethylene bags under nitrogen- and argon-enriched atmospheres and a conventional control atmosphere (air). All packaged samples were stored at 4 °C for 12 days and then analyzed. The headspace gas composition was monitored during storage. Different quality attributes were evaluated, including visual (colour), nutritional (macronutrients, individual sugars and fatty acids) and bioactive (hydrophilic and lipophilic molecules and antioxidant properties) parameters. Different statistical tools were used; the one-way analysis of variance (ANOVA) was applied to analyse the differences among treatments and a linear discriminant analysis (LDA) was used to evaluate the effects on the overall postharvest quality.

The argon-enriched atmosphere better prevented the samples from yellowing. The proximate composition did not change significantly during storage. Samples in control atmosphere revealed higher protein and ash contents and lower levels of lipids. The non-stored control samples presented the higher amounts of fructose, glucose and trehalose. The storage time increased the palmitic acid levels and decreased the content in α -linolenic and linoleic acids. The γ - and δ -tocopherols were higher after the 12 days of cold storage. Probably, the synthesis of these lipophilic compounds was a plant strategy to fight against the abiotic stress induced by storage. Higher levels of total phenolics and flavonoids and increased reducing power and β -carotene bleaching inhibition capacity were also found in the stored control samples. Once again, this result may be attributed to the intrinsic plant-protection mechanisms. Overall, the argon atmosphere was more suitable for quality preservation and shelf-life extension of buckler sorrel.



*The Poster Evaluation Committee of the
International Conference on Safety and Innovation in Food Packaging 2016
(InSIPack)*

Present

BEST POSTER AWARD

To

JOSE PINERA

For the Poster Entitled

*Nitrogen vs Azoxon what is the most effective atmosphere for shelf-life extension of Buxler
Sorel leaves*

At Session: Food Packaging Innovations

June 16, 2016

*Chairman of the Executive Board
National Institute of Health Dr Ricardo Jorge (INSA), I.P.*

Dr. Fernando de Almeida

Certificado n.º 002/2016