Novel Technologies for Food Processing Group

Goals

- ✓ Development of safe food products with increased quality and functionality through novel technologies alone or in combination with conventional techniques
- ✓ Increasing the competitiveness of the fruits and vegetables processing industry by obtaining high-value by products with less environmental impact
- ✓ Optimization of processing conditions for extended shelf life

Research Lines

- ➢ Nonthermal technologies for food processing: pulsed electric fields, pulsed light, ultrasounds, cold plasma
- ➢ Minimally processed foods (fresh-cut fruits and vegetables, juices) by combined methods: nonthermal decontamination, natural additives, edible coatings
- ➢ Nanostructured systems for food application
- ➢ Byproducts from fruits and vegetables industrialization: characterization and development of new food products

Main activities

- Small-scale food processing studies
- Evaluation of changes in microbiological, enzymatic, physical, chemical and sensorial properties, as well as in health-related compounds and their bioaccesibility as affected by processing and storage
- Definition of the best conditions for obtaining products with specific characteristics
- Food shelf life determination through modelling of relevant phenomena
- Transference of knowledge to the food industry

International impact

Pioneering the study and development of nonthermal food processing technologies in Europe.

Internationally-recognized expertise regarding the development of strategies for the preservation of minimally processed plant-based products.

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Relevant publications (2017)

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2. Artiga-Artigas, M.; Acevedo-Fani, A.; Martin-Belloso, O. Improving the shelf life of low-fat cut cheese using nanoemulsion-based edible coatings containing oregano essential oil and mandarin fiber. Food Control. 76, 1-12. 2017
3. Acevedo-Fani, A.; Soliva-Fortuny, R.; Martín-Belloso, O. Food-grade nanostructures for the development of sustainable foods with enhanced safety, quality and functionality. Trends in Food Science and Technology. 60, 12-22. 2017
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5. Salvia-Trujillo, L.; Rojas-Grau, M.A.; Soliva-Fortuny, R.; McClements, D.J.; Martín-Belloso, O. Edible nanoemulsions as carriers of active ingredients. Annual Reviews in Food Science and Technology, Vol 8. 439-466. 2017
6. Artiga-Artigas, M.; Acevedo-Fani, A.; Martin-Belloso, O. Effect of Sodium alginate incorporation procedure on the physicochemical properties of nanoemulsions. Food Hydrocolloids 70, 191-200. 2017
7. Arredondo-Ochoa, T.; García-Almendárez, B.E.; Gutiérrez-López, G.F.; Martín-Belloso, O.; Escamilla-García, M.; Regalado-González, C. Design and characterization of corn starch edible films including beeswax and natural antimicrobials. Food and Bioprocess Technology. 10(1), 103-114. 2017

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9. Gasa-Falcón, A.; Odriozola-Serrano, I.; Oms-Oliu, G.; Martin-Belloso, O. Influence of mandarin fiber addition on physico-chemical properties of nanoemulsions containing β-carotene under simulated gastrointestinal digestion conditions. LWT-Food Science and Technology. 84, 331-337. 2017
10. Camiro-Cabrera, M.; Escobedo-Avellaneda, Z.; Salinas-Roca, B.; Martín-Belloso, O.; Welti-Chanes, J. High Hydrostatic Pressure and Temperature Applied to Preserve the Antioxidant Compounds of Mango Pulp (Mangifera indica L.). Food and Bioprocess Technology. An International Journal. 10(4), 639-649. 2017
11. Morales-de la Peña, M.; Salvia-Trujillo, L.; Rojas-Grau, M.A.; Martín-Belloso, O. Effects of high intensity pulsed electric fields or thermal treatments and refrigerated storage on antioxidant compounds of fruit juice-milk beverages. Part I: Phenolic acids and flavonoids. Journal of Food Processing and Preservation. 41 (3), art e-12912, 1-10. 2017
12. Acevedo-Fani, A.; Salvia-Trujillo, L.; Soliva-Fortuny, R.; Martín-Belloso, O. Layer-by-layer assembly of food-grade alginate/chitosan nanolaminates: formation and physicochemical characterization. Food Biophysics. 12(3), 299-308. 2017
13. Mtaoua, H.; Sánchez-Vega, R.; Ferchichi, A.; Martín-Belloso, O. Impact of high-intensity pulsed electric fields or thermal treatment on the quality attributes of date juice through refrigeration storage. Journal of Food Processing and Preservation. 41(4), art e-13052, 1-8. 2017
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