frontiers | Frontiers in Nutrition

TYPE Editorial
PUBLISHED 06 February 2023
DOI 10.3389/fnut.2023.1150768

OPEN ACCESS

EDITED AND REVIEWED BY
Alejandro Cifuentes,
CIAL (CSIC), Spain

*CORRESPONDENCE
Rui M. S. Cruz
✉ rcruz@ualg.pt

SPECIALTY SECTION
This article was submitted to Nutrition and Food Science Technology, a section of the journal Frontiers in Nutrition

RECEIVED 24 January 2023
ACCEPTED 27 January 2023
PUBLISHED 06 February 2023

CITATION
Cruz RMS and Jung J (2023) Editorial: Sustainable solutions in food technology, volume II. *Front. Nutr.* 10:1150768. doi: 10.3389/fnut.2023.1150768

Editorial: Sustainable solutions in food technology, volume II

Rui M. S. Cruz[1,2]* and Jooyeoun Jung[3]

[1]Department of Food Engineering, Institute of Engineering, Universidade do Algarve, Faro, Portugal, [2]MED-Mediterranean Institute for Agriculture, Environment and Development and CHANGE-Global Change and Sustainability Institute, Faculty of Sciences and Technology, Universidade do Algarve, Faro, Portugal, [3]Department of Food Science and Technology, Oregon State University, Corvallis, OR, United States

KEYWORDS

food, sustainability, waste recovery, green technologies, quality

Editorial on the Research Topic
Sustainable solutions in food technology, volume II

This is the second edition of the Research Topic—*Sustainable Solutions in Food Technology* and it consists of four articles that provide recent advances and insights on new technologies and food sources that ensure food quality and safety while also having a positive environmental impact.

The article of Moreira et al. presents pequi (*Caryocar brasiliense*) waste extract as a synergistic agent in the microbial and physicochemical preservation of low-sodium raw goat cheese. To investigate the effect of pequi waste extract (PWE), combined with UV-C radiation (CEU) and vacuum packaging (CEV) a Principal Component Analysis was applied. The results showed that CEV samples presented lower loadings for *Enterobacteriaceae* and *Staphylococcus* subsp. compared with other treatments. A count reduction up to 3-fold ($p < 0.05$) was observed compared to when vacuum treatment was used alone. On the other hand, CEU presented an increase of up to 1.2-fold in staphylococcal count compared to the treatment only with UV-C. A 8.5% protein loss was shown when PWE was added to UV-C-treated cheeses. During storage, PWE, particularly in CEV, delayed post-acidification. CEV was more stable for color and texture, up to 4.5 and 1.6-fold, respectively, compared with the vacuum treatment. The obtained results indicate that PWE, when combined with the vacuum, may be a new and promising synergistic agent in the microbial and physicochemical preservation of low-sodium raw milk cheese.

Albertos et al. showed the characterization of Zamorano-Leonese donkey milk. In terms of amino acid and protein profile the studied breed was similar from others. However, a higher content of unsaturated fatty acids (around 55%) was presented, and the main contributor was oleic fatty acid (25%). The milk also showed a higher content of vitamin C (63 mg/L), riboflavin (345 μL/L), folic acid (526 μL/L), and vitamin E (7 μg/100 g) compared with other donkey breeds. A high concentration of vitamin D (1.5 μg/100 g) was also observed, although with a low-fat content. On the other hand, this breed presented a lower mineral concentration and ash content. Regarding the micronutrients, high amounts of zinc (2,185 μg/kg) and selenium (107 μg/kg) were detected. This milk, besides being a good source of protein, is a food and/or ingredient that may contribute for a suitable functioning of the circulatory and immune systems.

Ma et al. presented the influence of multi-frequency ultrasound-assisted immersion freezing (UIF) on cultured large yellow croaker (*Larimichthys crocea*). The results showed that UIF-175-treated samples presented a total freezing time, lower 29.71% than the IF-treated samples ($p < 0.05$). The UIF contributed for a reduction in the thawing and cooking losses, and total volatile base nitrogen (TVB-N), and an increase in the water holding capacity (WHC). At 175 W the samples showed minimum thawing loss. The results were 53.11% lower compared with the AF (air freezing) treated samples and 46.45% lower than the IF (immersion freezing) treated samples

($p < 0.05$). The lowest cooking loss (10.28%) was presented by the UIF-175-treated samples, similar to the fresh samples (9.30%). The same treated samples also presented the highest WHC (81.33%) and again similar to the fresh ones (85.78%) ($p > 0.05$). In what concerns the TVB-N, UIF-175 samples showed similar values to fresh samples (10.10 mg N/100 g), and lower than the samples frozen by other ultrasonic treatments. The multi-frequency UIF at 175 W also reduced ice crystal size and pore diameter. A reduction in the accumulation of bitter amino acids and an increase in the accumulation of umami amino acids was also observed for the UIF-175 treatment. The quality of large yellow croaker can definitely be improved by multi-frequency UIF, regulated at a suitable ultrasonic power.

Cortes-Ferre et al. showed an enzyme-assisted extraction (EAE) of anti-inflammatory compounds from habanero chili pepper (*Capsicum chinense*) seeds (CPSs). The objective of this study was to define the cellulase-assisted extraction conditions of capsaicinoids and phenolic compounds from habanero CPSs and to evaluate the anti-inflammatory activity of the obtained extracts on murine macrophages. The conditions, 30 °C, 2,500 UI/L, and 150 min of extraction presented the highest phenolic compound content (337.96 mg GAE/L). At 45 °C with 250 UI/L for 150 min, the highest capsaicin content (310.23 μg/mL) was observed, while at 60 °C, 2,500 UI/L, and 120 min the results obtained for dihydrocapsaicin were 167.72 μg/mL. The conditions 60 °C, 250 UI/L, and 150 min presented the highest anti-inflammatory response, and nitric oxide production was reduced to 22.56%. EAE, and using water as a solvent, allowed the recovery of compounds with anti-inflammatory activity from habanero CPSs.

Author contributions

RC and JJ contributed to manuscript writing, revision, and reading. All authors contributed to the article and approved the submitted version.

Acknowledgments

The editors of this topic would like to thank all authors and reviewers for their contributions to the present collection.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note