



BOOK
OF
ABSTRACTS

XXII Congress

EuroFoodChem

June 14-16, 2023 | Belgrade, Serbia

<https://xxiieurofoodchem.com>

congress2023@xxiieurofoodchem.com

**Serbian Academy of
Sciences and Arts**

Knez Mihailova 35
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**Faculty of Chemistry
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CONGRESS TOPICS

- **Food composition, quality, and safety**
- **Food sustainability, including byproducts valorization**
- **Novel foods**
- **Food and health, functional foods, and ingredients**
- **Chemical reactions and interactions of food components**
- **Chemical changes in food under processing and storage**
- **Food adulteration, authenticity, and traceability**
- **Novel methods for food chemistry**
- **Food contaminants**

GENERAL INFORMATION

Official Language:

English. No simultaneous translation will be provided:

Registration Desk opening times.

Day 1: June 14, 2023, 8:30-10:30h

Day 2: June 15, 2023, 8:30-10:30h

Day 3: June 16, 2023, 8:30-10:30h

**The Registration Desk is situated in Serbian Academy of Sciences and Arts
Knez Mihailova 35, 11000 Belgrade**

LOCAL ORGANIZER

PCO – ARIA Conference & Events doo

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Liability and Insurance: Neither the Food Chemistry Division of EuChemS nor the local organizers will assume any responsibility whatsoever for damage or injury to persons or property during the Congress. Participants are recommended to arrange for their personal travel and health insurance.

Certificate of Attendance: Will be given at the registration desk and sent by email after the end of the Congress.

Sustainable use of pumpkin: characterization of the pulp and valorisation of by-products in obtaining preservative extracts

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In the search for more sustainable industrial processes, the use of by-products from food production is an important strand [1]. Currently, the food industry has increasingly developed practical, ready-to-eat, and long shelf-life food products. However, this demand involves the use of synthetic food additives, which are associated with harmful effects on consumers health. Aiming to promote sustainability allied to the replacement of synthetic additives by natural alternatives, this work proposed the use of by-products from pumpkin processing, as a matrix for obtaining preservative compounds with potential to be applied in a product of pumpkin pulp. For that purpose, five different pumpkins cultivated in Egypt, namely 'Butternut Squash', 'Golden Cushaw', 'Dickinson', 'Halloween', and 'Honey Delite' were assessed. The pulp was evaluated regarding its nutritional value and chemical composition, in terms of free sugars (HPLC-RI), fatty acids (GC-FID), tocopherols (HPLC-FLD) and organic acids (UFLC-PDA). The by-products, more specifically the seeds, fibers, and peel, were evaluated for their antioxidant and antimicrobial capacity, as well as their cytotoxicity.

All the pulp samples presented carbohydrates as the major compounds, followed by protein and fibers, with low content of fat. Regarding free sugars, fructose was predominant in all samples, except for the 'Golden Cushaw', which presented high levels of sucrose. Glucose was also present in high levels in most of the samples, and considerable contents of trehalose and raffinose were also found. Regarding fatty acids profile, the pulp revealed to be rich in saturated and polyunsaturated fatty acids, representing, respectively, about 40-50% of the total fatty acids, composed mainly by palmitic (C16:0), linoleic (C18:2n6c), α -linolenic (C18:3n3), and stearic (C18:0) acids. Regarding organic acids, all pulp samples presented malic and fumaric acids. In the samples that presented quinic acid, this was present in major quantity. Oxalic acid and traces of shikimic and citric acids were also detected. Also, the samples showed α and γ isoforms of tocopherol, being the last one the most abundant. In addition to the rich nutritional composition of the pulps, as expected, the by-product extracts showed excellent preservative capacity. In the TBARS assay, the samples showed great capacity to inhibit lipid peroxidation, mainly the seeds and two of the five fibers. Moreover, all samples presented antibacterial capacity, inhibiting the growth of one to six of the eight tested bacteria. Also, some samples were capable of inhibiting the growth of the two fungal strains tested, with the peels standing out, protecting against at least three bacteria and one fungus. Additionally, none of the samples presented cytotoxic activity against the non-tumor porcine liver cells (up to 400 μ g/mL), thus expressing its safety for food application.

With this, it is possible to verify the potential use of pumpkin by-products as a source of natural preservatives, as well as the great nutritional value of the pulp, which can be further explored in the development of new pulp products preserved with their processing by-products. This favours a circular economy through sustainability.

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References:

- [1] M. G. Leichtweis, M. Beatriz P. P. Oliveira, I.C.F.R. Ferreira, Carla Pereira, L. Barros, *Antioxidants*, 10 (2021) 1827.