

BOOK OF ABSTRACTS

11th International Symposium on **RECENT ADVANCES IN FOOD ANALYSIS**

**November 5-8, 2024
Prague, Czech Republic**

Jana Pulkrabová, Monika Tomaniová, Stefan van Leeuwen, Michele Suman,
Michel Nielen and Jana Hajšlová
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&

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CHEMICAL CHARACTERIZATION BY LC-HR-MS/MS OF AN INNOVATIVE AND ENRICHED TARALLO PUGLIESE FORTIFIED WITH LEGUME END-PRODUCTS

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The market of innovative and functional foods has progressively expanded in the last decades with a multitude of innovative and nutritionally valued food products launched on the market. These health promoting foods contain, in addition to nutrients, other components that may be beneficial to the health; they encompass most nutrient-dense foods such as fish, beans, whole grains, and nuts, as well as fortified, enriched foods [1].

Pulses and legumes represent important sources of plant protein, excellent reservoirs of dietary fiber, complex carbohydrates resulting in low GI (glycemic index) and are rich in bioactive compounds, phenolic acids, flavonoids, and tannins [2]. Food processes of pulses often lead to a loss of valuable by-products rich in phenolics and fibres therefore, the current concerns of recycling bio-products disposed from food industries play an important role in the circular economy contributing to valorise and re-utilize end-products that otherwise would increase the production of organic wastes.

In this note the chemical characterization of lentil hulls powder and the production and chemical profiling of the Italian Traditional bakery snack product "Tarallo Pugliese", fortified with lentils hull flour at different inclusion levels, will be presented. In order to identify the antioxidant and beneficial compounds characterizing lentil hull flour also detected in Tarallo Pugliese thus contributing to accrue the overall beneficial properties of this innovative snack, different types of Tarallo Pugliese (prepared using wheat flour type 00 and lentils hull flours at different ratios) were produced upon slight modifications of the traditional Italian Tarallo recipe.

Taralli samples were grinded, extracted and analysed by High Resolution Mass Spectrometry in Full-MS/data dependent-MS MS mode combined with software assisted treatment of final data for correct peak assignment and compound identification. Specific compounds belonging to the polyphenol category known for their beneficial properties on humans including catechin, gallic acid and procyanidin proved to characterize lentils hulls have been detected in Taralli fortified with legume hulls at 20% inclusion level, showing the highest intensity by Mass Spectrometry compared to samples without addition. Further investigations will be directed to assess the sensorial properties of the produced prototype samples.

[1] Cena, H., Calder, P.C. Defining a Healthy Diet: Evidence for the Role of Contemporary Dietary Patterns in Health and Disease. *Nutrients* 2020, 12, 334

[2] Singh, B., Singh, J. P., Kaur, A., & Singh, N. Phenolic composition and antioxidant potential of grain legume seeds: A review. *Food research international*, 101, 2017, 1.

Keywords: chemical analysis, high Resolution mass spectrometry, bakery products, health promoting foods, legumes bioproducts

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