UNIVERSITATEA LUCIAN BLAGA DIN SIBIU

ISEKI-FOOD ASSOCIATION

FACULTY OF FOOD ENGINEERING 1990 TIMIŞOARA

# 6th ISEKI-FOOD E-Conference

"Food production based on food safety, sustainable development and circular economy"

# Book *of* Abstracts

22 -24 NOVEMBER 2023

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# Book *of* Abstracts

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Co-organiser: University of Life Sciences Mihai I Timișoara, Romania

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consumed include beetles, bees, wasps, grasshoppers, and locusts. Due to their high health-promoting potential, edible insects are considered a good substitute for protein and other nutrients. The aim of the study was to evaluate the content of amino acids, minerals, and antioxidant properties of buffalo worm (*Alphitobius diaperinus*) larvae powder as a new alternative food compound. *Alphitobius diaperinus* powder was purchased via the online market. The amino acid content was determined using the Quick Easy Cheap Effective Rugged Safe (QEChERS) and high-performance liquid chromatography (HPLC) technique. In turn, the antioxidant properties were analysed in extracts prepared using two different extraction methods (conventional and ultrasound-assisted extractions). Mineral components were measured using atomic absorption spectrometry (AAS).
The obtained results demonstrate that the powder from buffalo worm larvae has a high potential for consumption as an alternative to animal protein because of its high content of essential amino acids. The insect powder was notable for its glutamic acid content. In addition, it contained relatively high amounts of aspartate, glutamine, and lysine. Furthermore, it was a valuable source of minerals and had high antioxidant potential. Among minerals, it showed higher potassium and calcium contents. The high antioxidant activity was confirmed in extracts obtained with the use of ultrasound-assisted extraction.

Keywords: insects, buffalo worm, alternative source, nutrients

## TOPIC: HEALTH AND NUTRITION

### DEVELOPMENT AND CHARACTERIZATION OF A CHEESE SPREAD INCORPORATING THE NEXT GENERATION PROBIOTIC *AKKERMANSIA MUCINIPHILA*

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*Akkermansia muciniphila*, a commensal gut bacterium, has gained attention as a probiotic due to its significant biological benefits in various human diseases. To be used as a live biotherapeutic industry's primary challenge is to create effective delivery vectors to maintain its viability and stability during product manufacture, shelf-life, and consumption, particularly throughout the digestive system. This research focused on developing a delivery system for *A. muciniphilausing,* a dairy-based mixture consisting of 77% Portuguese whey cheese and 23% Greek-style yogurt. Subsequently, this food product was analysed for its microbiological and physicochemical properties, total phenolic content, as well as its antioxidant, antidiabetic, and antihypertensive effects. Additionally, the study assessed how well this delivery system protected *A. muciniphila* viability during 21 days of refrigerated storage at 4°C and exposure to simulated gastrointestinal conditions. The findings indicated that the probiotic cheese spread maintained high microbiological quality, contained low total phenolic content (0.365 mg gallic acid equivalents/g dried cheese), and exhibited intriguing biological effects, such as a 98.10% inhibition of α-glucosidase (indicating potential antidiabetic benefits) and a 49.18% inhibition of angiotensin-converting enzyme (suggesting potential antihypertensive benefits). Moreover, it ensured a high level of *A. muciniphila* availability (> 108 CFU/g) during the 21-day refrigerated storage and simulated gastrointestinal conditions. Furthermore, this product displayed similar characteristics in terms of texture, color, water activity, and pH compared to the cheese control (without *A. muciniphila*), indicating potential acceptance by consumers. In conclusion, the cheese spread composed of Portuguese whey cheese and Greek-style yogurt holds promise as an effective carrier for *A. muciniphila*, safeguarding its viability against adverse conditions during refrigerated storage and the passage through the gastrointestinal tract.

Keywords: Cheese spread, *Akkermansia muciniphila*, simulated gastrointestinal conditions, viability

**ISEKI-Food E-Conferences** aim to create an international platform for communication across continents and disciplines. They bring together scientists and support students from various areas of research in specific food-related fields to exchange and share information in support of the relationship of food to human health and well-being.
The main topic of the 6th ISEKI-Food E-Conference was **"Food production based on food safety, sustainable development and circular economy"**.
The conference focused on
specific topics such as: "Bioprocessing and bio-refining for the conversion of food waste and by-products into value-added foods" and "Development of new foods and food packaging innovation".

## ISEKI E-CONFERENCES

**1st ISEKI E-Conference**
20 May 2016

**2nd ISEKI E-Conference**
25 – 26 November 2019

**3rd ISEKI E-Conference**
18 – 19 November 2020

**4th ISEKI E-Conference**
10 – 12 November 2021

**5th ISEKI E-Conference**
23 – 25 November 2022

**6th ISEKI E-Conference**
22 – 24 November 2023

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