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10th

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Food connects people and
shares science in a resilient world

Book of Abstracts



Galati University Press

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EURO-ALIMENT 2021

THE 10TH INTERNATIONAL SYMPOSIUM

**Food connects people and shares
science in a resilient world
7-8th October, Galați, Romania**



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FOREWORD

The International Euro-Aliment Symposium is organized every two years by the Faculty of Food Science and Engineering from the Dunărea de Jos University of Galați, reaching its 10th edition. It provides an excellent opportunity to set up a new perspective and goals for the national and international food academics and stakeholders.

The Euro-Aliment 2021 is committed to function as the best environment for the food scientists, researchers, engineers, technologists, policymakers and businesses in the food and food-related fields, to connect and collaborate to shape new and emerging technological solutions for the development of food industry adapted to the ongoing pandemic crisis. Thus, in a distancing world, Euro-Aliment 2021 also aims to connect people better, share science through food, and identify strategies for an eco-resilient world.

Food science, food technology and related fields such as biotechnology, nutrition, bioeconomy etc. proved to play an increasingly important role in providing efficient and sustainable food systems, enabling food security, safety, quality, and responsibility assets to be delivered to the consumers next to food, alleviating their uncertainties and un-trust in a turbulent ongoing and post-pandemic world.

By supporting the food science community and promoting new trends and drivers of food science, food technology, biotechnology, and all other food-related fields, Euro-Aliment 2021 organizing committee expresses its gratitude to all food chain stakeholders, from farmers to marketing and serving, for providing the same diversity of food during the pandemic, as before it.

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MODIFICATION OF AMINOACID CONTENT OF BREAD USING SPROUTED AMARANTH GRAIN

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Bread is a staple food all around the world. *Amaranthus L.* is a promising pseudocereal crop with high protein and lysine content, essential metals, dietary fibre of high quality, squalene, showing different biological activities. Soaking grain followed by its sprouting and disintegration is able to save nutrients, concentrated in seed without removing the seed outer layers. The aim of this research is to study amino acid composition of sprouted amaranth grain and bread made with its application along bread making. Amaranth grain of Kharkivskiy-1 variety grown in Ukraine was used to obtain the sprouted and disintegrated amaranth grain (SDAG), which was soaked for 12–48 hours. The amino acid composition of whole amaranth grain, SDAG and wheat bread made with its 20% of SDAG was determined by the method of ion-exchange liquid chromatography with the analyzer for amino acids T-339 (Mikrotechna, Czech Republic, Prague). Amaranth grain differed significantly in amino acid composition from wheat flour, despite the presence of the same limiting acids of the protein as isoleucine and valine, which were slightly higher for amaranth grain. Unlike wheat flour, only valine, isoleucine and leucine in amaranth grain showed amino acid rates below 50%. Lysine was the dominant amino acid of amaranth grain (85% amino acid score), while for wheat flour it reached only 39%. Due to fermentation occurring in amaranth grain during soaking, in particular, an increase in the activity of proteolytic enzymes in 1.2-1.5 times, SDAG was characterized by an improvement of amino acid score for all essential amino acids in 1.5-2.7 times. Additionally, the amino acid composition of bread was characterized by an increase in the scores of all essential amino acids, but for wheat bread lysine remained a limiting amino acid (62% score) in contrast to the wheat-SDAG bread with 20% SDAG, the lysine content was higher in 2.4 times in comparison to the wheat bread. All essential amino acids of the wheat-SDAG bread had a 133-213% score, which led to a significant improvement in the amino acid composition of the protein. Moreover, the wheat-SDAG bread contained in 1.7 and 1.6 times more essential and non-essential amino acids respectively. All in all, amino acid content of amaranth grain and wheat bread with 20% SDAG was essentially improved by the grain bioactivation.

Keywords: amaranth grain, soaking, bread, disintegration, amino acid content

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