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Development of climate chambers for the monitoring of the growing process of sunflower sprouts under temperature and humidity stressing factors using NIRS

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The development of environmentally-controlled chambers has become the interest of modern-day scientific and technological research, driven by the need for understanding the influence of environmental factors to minimize the impact of abiotic stress in plants. Besides the conventional analytical methods, Near Infrared Spectroscopy (NIRS) being a nondestructive, fast, and reliable method has gained popularity for crops and food analysis. The aim of this research was to test the suitability of NIRS for the evaluation of sunflower sprouts growth in non-commercial climate chambers under different conditions. Sunflower plants were kept, under controlled environment, in nine individual chambers from emergency until sprouting, at selected temperatures (7, 14 and 21 °C) and relative humidity (40, 60 and 80%.) NIRS analysis of the plants was performed in regular time intervals using the XDS rapid content analyser (Metrohm, Denmark). In addition to the NIRS measurements, the standard quality parameters (height of plants, weight, dry matter, pH, conductivity, ascorbic acid) of the plants were also monitored. Chemometric methods (PCA, LDA and PLSR) were used for data analysis. NIRS combined with the use of non-commercial climate chambers show to be suitable to test sunflower sprouting under different environmental stress conditions.

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Antimicrobial and antioxidant properties of fermented proteins by different lactic acid bacteria strains

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Lactic acid bacteria can hydrolyze proteins by their proteolytic enzymes to release different shorter chain peptides that may have special biological functions. In this work, antimicrobial and antioxidant properties of some peptides produced by fermentation of proteins with lactic acid bacteria strains was investigated. Milk protein, three lactic acid bacteria strains, 5 pathogenic bacterial strains were used. The results showed that all fermented proteins can inhibit the growth of *E. faecalis*, *E. cloacae* and *Listeria monocytogenes*, thus they have antimicrobial activity. Additionally, the antioxidant capacity of all samples was observed, and the best result was assayed in the case of the *Lactobacillus* 2231T strain at 8 hours of fermentation. This work is in progress. Despite the results are preliminary, these can serve very good bases for understanding capacity of lactic acid bacteria in food technology.

This work was supported by the New Széchenyi Plant Project No. GINOP_PLUSZ-2.1.1-21-2022-00048, by the NKFIH Project No. TKP2021-NVA-22.