



Objectives of Phase 3/2024 – Project AMI-FOOD

The main objective of the 2024 stage consisted in the realization of the opto-electrochemical experiment model and the demonstration of its functionality.

In order to achieve this objective, the following activities were considered:

- Creating an experimental model of the portable system for monitoring amines in food;
- Demonstration of the functionality under controlled conditions of the portable system based on aptasensors for the determination of biogenic amines in food
- Dissemination and communication of results; attending conferences; Working visits to partners.

Results Phase 2/2023

During the 2024 stage, all the activities foreseen in the Implementation Plan were carried out and all the estimated measurable results were obtained:

- Experimental model of the portable system for the determination of histamine and histidine;
- Functionality demonstration report under controlled conditions with real samples;
- Dissemination of project results by participating with 5 papers at 3 international conferences; 4 participations in international invention fairs EUROINVENT, Traian Vuia, iCAN2024, JDII2024, 2 ISI articles sent for publication; 1 ISI article published.
- The web page of the project was updated: www.ami-food.ro
- Working visit of the Romanian partner EPI-SISTEM to the coordinator.
- The Scientific and Technical Stage Report was developed
- The final scientific and technical report of the project was developed;
- The Testimonial was developed for publication by the contracting authority

Publications

1. Zamfir L-G, Jinga M-L, Tulea R, Vărzaru G., Constantin M, Răut I, Firincă C, Jecu L, Doni M, Gurban A-M, *Portable Electrochemical System for the Monitoring of Biogenic Amines in Soil as Indicators in Assessment of the Stress in Plant*, Chem. Proc. 2023, 13(1), 2; <https://doi.org/10.3390/chemproc2023013002>
2. Epure P, Gurban A-M, Zamfir LG, *Practical aspects of biogenic amines detection*, Chem. Proc. 2023, 13(1), 24; <https://doi.org/10.3390/chemproc2023013024>

3. Firincă C., Zamfir L-G, Constantin M, Răut I, Capră L, Popa D, Jinga M-L, Baroi A., Fierăscu RC, Corneli NO, Postolache C, Doni M, Gurban A-M, Jecu L, Şesan TE, *Microbial Removal Of Heavy Metals From Contaminated Environments Using Metal-Resistant Indigenous Strains*, Journal of Xenobiotics 2024, 14, 51-78; <https://doi.org/10.3390/jox14010004>
4. Răut I, Zamfir L-G, Constantin M, Corneli N. O, Jinga L, Firincă C, Jecu J, Doni M, Epure P, Gurban A-M, *Assessment of Biogenic Amines Produces by Microorganisms as Food Spoilage Indicators and Their Sensitive Detection Using Nanocomposite-based Biosensors*, in curs de trimitere catre Foods (MDPI)

International Exhibitions of Inventions

1. The 16th Edition of EUROINVENT – European Exhibition of Creativity and Innovation Iaşi, Romania, June 6-8, 2024- Process for making electrochemical biosensors based on nanomaterials for the determination of biogenic amines – Zamfir LG, Gurban AM, Doni M, Jinga ML, Raut I, Constantin M, Jecu ML;
2. "TRAIAN VUIA" International Exhibition of Inventions and Innovations Timișoara, 10th edition, during June 13-15, 2024 - Process for making electrochemical biosensors based on nanomaterials for the determination of biogenic amines - Zamfir LG, Gurban AM , Doni M, Jinga ML, Raut I, Constantin M, Jecu ML.

Work visits at the partner institution

During 2024, the partner involved in the project made 2 working visits to the ICECHIM headquarters, where certain aspects related to the activities carried out in 2024 were clarified. On this occasion, the handover of a set of functionalized electrodes from ICECHIM to EPI-SISTEM was prepared as follows so that it is possible to establish the technical measurement parameters and test the experimental model for real food samples. Electrochemical (cyclic voltammetry) and EIS, and optical ECL and spectrometric measurements were performed using aptasensors developed by the coordinator. The spectroelectrochemical testing was evoked in order to use in parallel luminescent nanomaterials that can be detected with the help of the electrochemiluminescence configuration.