

Closure of the bio-economy value chains through the acquisition of innovative bio-products required by the market (PRO-SPER)

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This project (PN-III-P1-1.2-PCCDI-2017-056, 10PCCDI/2018) is carried out in a consortium consisting of the National Institute of Research and Development for Chemistry and Petrochemistry - ICECHIM, Bucharest (Coordinator), „Petru Poni” Institute of Macromolecular Chemistry, Iasi (Partner 1), "Dunarea de Jos" University of Galati (Partner 2), National Research Institute -Development for Biological Sciences, Bucharest (Partner 3), "Aurel Vlaicu" University of Arad, Romania

Four component projects are being carried out, as follow:

Project 1 - "Development of a new generation of biostimulants for plants by the superior use of the depleted substrate from Pleurotus - NeXTUS lignocellulosic fungus culture", **coordinated by the National Research and Development Institute for Chemistry and Petrochemistry – ICECHIM.**

The NeXT-US project is intended to develop a bioproduct from the new generation of biostimulants for plants. The specific objectives of the NeXT-US project are:

- (i) extracting the components of interest and converting them into active ingredients;
- (ii) obtaining the new generation biostimulants through nanoformulation and dispersive conditioning;
- (iii) verifying the biological activity of the new biostimulants under controlled and experimental field conditions.

Project 2 - "Chitosan-based bioactive films extracted from *Agaricus bisporus* fungus culture by-products for the protection of deposited fruits - ActNOS", **coordinated by the National Institute for Research and Development for Biological Sciences, Bucharest.**

The Act-NOS project aims at developing an edible film-type product designed to increase the shelf life of fruits. The specific objectives of the project are:

- (i) recovery of chitin from *Agaricus bisporus* and its conversion into chitosan;
- (ii) obtaining chitosan-based films and hydrogels and bioactive monoaldehydes for bio-application;
- (iii) expanding the concept of hydrogel and bio-industrial films in order to obtain complex systems with practical uses which encapsulate new bioactive agents, aiming at their synergistic release

Project 3 - "Probiotic, prebiotic, postbiotic products – of manifold uses, obtained from by-products of vegetable industrialization - 3-4Life", **coordinated by "Dunarea de Jos" University of Galati**; [Responsible for project component is prof. Nicoleta Stănciuc, nsava@ugal.ro](mailto:nsava@ugal.ro)

The 3-4-LIFE project aims at developing a bionanotechnology to produce 3-biotics. The objectives of the 3-4-LIFE project are:

- (i) recovery of components from agro-food by-products, by (enzymatic / intensified) extraction and concentration for nano-formulation and coacervation;
- (ii) building up complex structures for the protection of lactic bacteria by coacervating nano-encapsulated prebiotics together with lactic bacteria;
- (iii) development of the semisolid fermentation process by the use of free *Yarrowia lipolytica* yeasts and protected lactic bacteria in complex structures.

Project 4 - "New generation of cosmeceuticals products, obtained through the superior valorisation of the active ingredients from some sub-products of the bioeconomy - PRENDE, **coordinated by „Aurel Vlaicu” University of Arad.**

The PRENDE project is intended to obtain new cosmeceutical products based on bioactive peptides made from sub-products of the fish industry. The objectives are:

- (i) development of new active ingredients from by-products of the bio-economy, mainly fish sub-products, by patentable technologies intended for the manufacture of new generation cosmeceutical products;
- (ii) development of new nanostructure technologies for bioactive compounds for an effective release into skin tissues;
- (iii) development of new products and valorization of the biological properties and activity, on new experimental models of cell culture with inflammation, and by using optimized methods to analyze the ability of products to effectively restore the cellular balance.