



**IMPROVING FOOD SAFETY THROUGH THE DEVELOPMENT AND IMPLEMENTATION OF ACTIVE AND BIODEGRADABLE FOOD PACKAGING SYSTEMS (ACTIBIOSAFE)**

ACTIBIOSAFE project is developed based on cooperation between Romania and Norway in a complex trans-multi-disciplinary partnership within the EEA Research Programme - Research within priority sectors.

**Aims**

- Obtaining of composites based on degradable polymers such as PHAs or PLA and chitosan;
- Design for integration of encapsulated forms with active substances;
- Integration of technologies: extrusion, thermoforming, activated coating by gamma irradiation/ plasma exposure, electrocoating, modified atmosphere packaging, etc.;
- Industrial validation of prototypes by *in vivo* and on food packaging equipments tests.

**Objectives**

- ❖ Effective knowledge sharing among the research and scientific communities between Romania and Norway;
- ❖ Reducing food contamination risk and prolong shelf life of food products;
- ❖ Obtaining of nanostructured encapsulated systems based on natural oils (essential and cold-pressed oils) with chitosan and chitosan derivatives in order to improve the thermal stability and to manufacture the biodegradable materials with antioxidant/ antimicrobial/ antifungal or/and biological activities;
- ❖ Developing and implementing courses and supporting for individual PhD and MSc student projects;
- ❖ High level scientific publications, Master's dissertation and PhD theses.

The project, the activities of the consortium are developing in the following **WORK PACKAGES**:

- WP1:** Screening and characterization of raw materials
- WP2:** Processes development at laboratory scale and characterization
- WP 3:** Development of active food packaging
- WP 4:** Quality and Safety Validation of active food packaging systems
- WP5:** Dissemination, Exploitation and IPR Management
- WP6:** Consortium Management

## PROJECT PARTNERSHIP

ACTIBIOSAFE partnership comprises the following partners with expertise in different areas of food and polymer sciences:

"Petru Poni" Institute of Macromolecular Chemistry (PPIMC)	Romania	<b>Project Promotor.</b> R&D	Expertise in physical chemistry of polymers
NOFIMA AS	Norway	<b>Norwegian Partner</b> R&D (P1)	Expertise in biology and food technology
SC Research Institute of Organic and Auxiliaries Products SA (ICPAO)	Romania	SME (P2)	Expertise in processing of biopolymers
SC RODAX IMPEX SRL	Romania	SME (P3)	Expertise in packaging technologies and equipments
University of Agronomic Sciences and Veterinary Medicine Bucharest (USAMVB)	Romania	R&D (P4)	Expertise in food biotechnology

## THE MAIN DELIVERABLES

D1.1: Report on specifications and end users requirements definition, P1  
 D1.2 - D1.4; D2.1: Short list and characterization sheet of degradable polymers, additives, active compounds, P2, CO  
 D2.2: Complex materials (composites/nanocomposites, hydrogels, films, etc.) based on degradable polymers and active compounds, supply of materials, P2  
 D2.4: Characterization report on encapsulated forms, supply, CO  
 D2.5: Kinetic models for controlled release of active oils to foodstuff, CO  
 D2.8; D4.2: Report on performances of the materials based on degradable polymers/active compounds micro- and nanocomposites, P3  
 D3.1: Experimental model of food trays, supply, P2  
 D3.4, D3.5: Report on tests of experimental model, P3  
 D4.3: Report on Shelf life, P4  
 D5.1-5.3: Plan for Dissemination, CO

D5.3b: PhD thesis and Masters Dissertations P4, CO  
 D5.3e: Final project international workshop, CO  
 D5.4: Project poster, leaflet, newsletters printed and electronic formats (for download from the web), CO  
 D5.5: Research report of new market for the developed compositions and materials, P2  
 D6.2c: Final Report

## STATUS REPORT

Contract no 1SEE/2014, started on 30<sup>th</sup> of June, 2014.



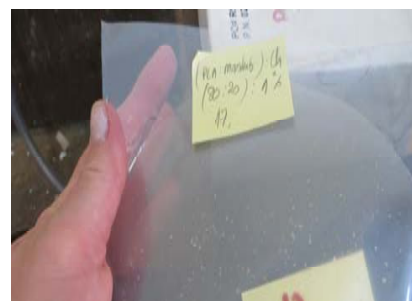
During the 1<sup>st</sup> year of the project, all partners contributed to define the specifications and requirements for end use of ACTIBIOSAFE products.

PPIMC and ICPAO defined and formulated the biodegradable thermoplastics with improved processability, thermal - mechanical properties by the addition of chosen plasticizers and additives into the biodegradable polymeric matrices. PPIMC selected the best formulations for active compounds.

New developed formulations based on polymeric matrices and plasticizers, their characterization and optimization were presented by PPIMC, RODAX and ICPAO partners, while NOFIMA and USAMVB performed antimicrobial activity for preliminary selected formulations.

The *Second Technical Meeting* hosted by RODAX took place at Brasov, Romania, as a special section within the NEEFOOD International Congress.

In the 1<sup>st</sup> year of the project, the research activity performed by the scientists has been concluded in different samples for film packaging and sheets for rigid packaging.



Film packaging samples (ICPAO)

## DISSEMINATION

- Project Webpage was realized – [www.actibiosafe.ro](http://www.actibiosafe.ro) and it is periodically up-dated;

- Project poster (ICPAO) and newsletter (RODAX) were elaborated and posted on webpage and disseminated during meetings
- One ISI published paper, 4 papers submitted to ISI journals, 8 oral presentations, 7 posters, 3 gold medals and 1 Excellence diploma at EUROINVENT 2015 European Exhibition. "Actibiosafe" poster was presented at 4 scientific meetings;
- 1 PhD thesis (PPIMC) and 2 Master dissertations (USAMVB) were elaborated.



Gold Medal for ACTIBIOSAFE at EUROINVENT 2015, Iasi, Romania

### Contact

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[www.actibiosafe.ro](http://www.actibiosafe.ro)