

INSTITUTUL NAȚIONAL DE CERCETARE DEZVOLTARE PENTRU BIORESURSE ALIMENTARE IBA București



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Research focus and strategic objectives

to address societal challenges by elaboration, implementation and dissemination of knowledge through research, education and services within the agrifood system

to increase the quality of life and wellbeing by providing healthy, sustainable and affordable food

Mission

to contribute for building up a strong connection between food system stakeholders and the society

to support the food system policy for a sustainable, resilient, transparent and responsible food system

to be part of the international food research community

to better understand the determinants of the diet for ensuring healthy and sustainable food choice

to develop high-quality, safe, healthy and sustainable food products

to increase its visibility at national, European, and international level

Vision

3

Research focus and strategic objectives

IBA has an active role in transforming Romanian's food system to become more sustainable, resilient, responsible, transparent, inclusive, diverse, and competitive for better contribution to the EU nutritional food security, as well as for better contributing to the whole health system in the view of the **“One Health” approach**.

The values of the institute are:

- competence,
- creativity,
- responsibility,
- team spirit,
- communication skills,
- flexibility,
- performance and,
- ethics.

- continuous activity in **increasing the competence of its staff**;
- periodic evaluation of the quality of the **institute's infrastructure** and its continuous improvement;
- **expanding the research areas** of IBA Bucharest in accordance with the institute's Plan of Development, taking into account the grand societal challenges ;
- **increasing scientific productivity** by increasing the number of results (publications, products, technologies, patents, etc.);
- participation in **high quality consortia** at national and international level;
- improving the **effectiveness of the technological transfer activity**;
- **increasing the visibility of the institute at national and international levels** and constantly improving its image, by increasing the level of satisfaction of clients/partners;
- **updating the research priorities** in food system and accordingly, the Strategy and Plan for Development.
- the identification, **evaluation and effective control of risks**, so that they are reduced to an acceptable level, which does not affect the institute' quality of its activities.

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Research focus and strategic objectives

Food safety: food preservation, food contaminants, food packaging

- Detecting and reducing the level of food contaminants (chemical and microbiological);
- Food authenticity (quality and origin);
- Food microecology;
- Innovative preservation methods.

Food nutrition: influence of diet on health, food intolerance (coeliac disease and phenylketonuria), healthy food.

- New food matrixes improved in bioactive compounds for different consumers categories and improved sensorial attributes;
- Functional food;
- Understanding the role of whole meal in health and well-being.

Food (bio)technologies:

- The influence of technology and food matrix in nutrients bioavailability;
- Green food technologies;
- Mild food technologies keeping the initial level of nutrients in raw materials;
- Clean technologies by circularity - biorefinery;
- Increase the diversity of vegetal raw materials in food.

Consumer sciences:

- Understanding the attitude of consumers related to food choices;
- Understanding the Romanian consumer behavior;
- Identify the determinants of food to be chosen as part of diet;
- Relation between consumer and food market availability;
- Relation about labelling and health and nutrition claims.

4 Infrastructure

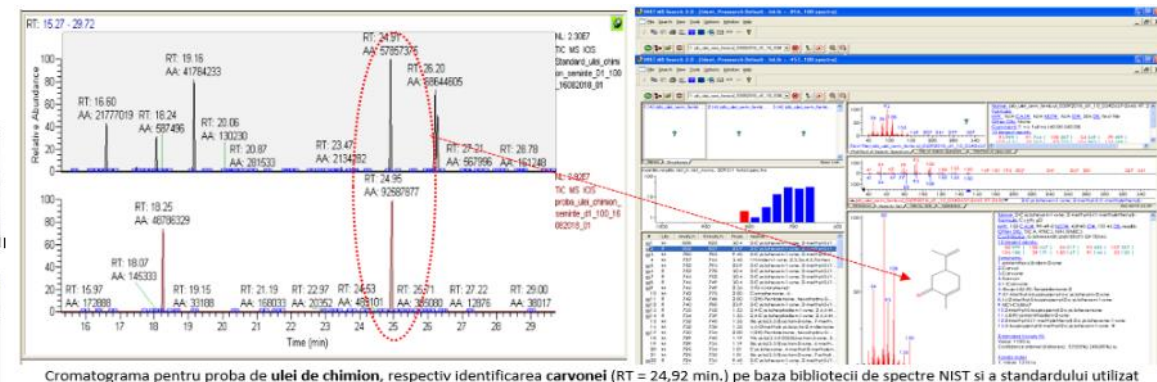
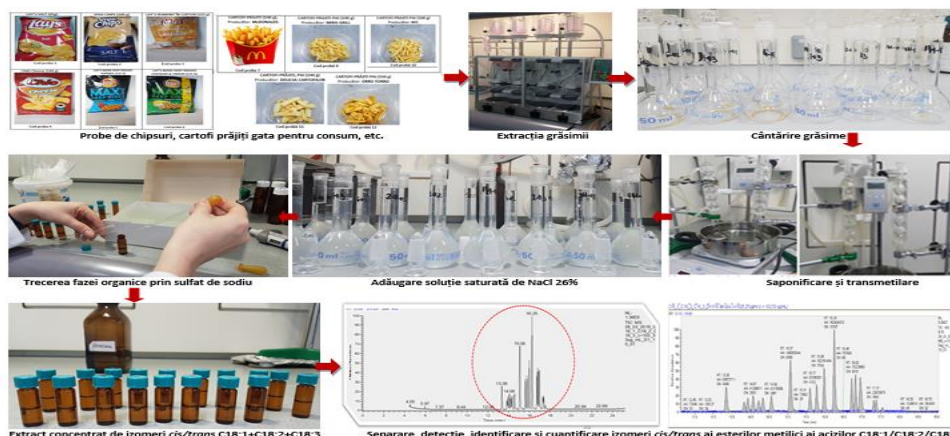
Gas-Chromatography

Main equipments:

- Gas chromatograph coupled with ion trap mass spectrometer (GC-MS)
- Gas chromatograph coupled with triple quadrupole mass spectrometer (GC-MS-MS)
- High resolution gas chromatograph coupled with high resolution mass spectrometer (HRGC-HRMS)

Expertize:

- Detecting and quantifying saturated and unsaturated fatty acids, flavor compounds, adulterants.
- Detection and quantification of chemical hazards (acrylamide, dioxins, etc.)



4 Infrastructure

Expertize:

- Detecting and quantifying nutrients and bioactive compounds (eg amino acids, vitamins, phenolic compounds, sweeteners) or some adulterants (eg additives);
- Detection and quantification of chemical hazards (e.g. Mycotoxins - patuline)

Expertize:

- Energetical and Nutritional Values;
- Macronutrients determination;
- Dietary fibers;
- Total Antioxidant Capacity;
- Dough Rheology;
- Thermal fingerprint of food and food ingredients

Liquid-Chromatography

Main equipments:

- HPLC - DAD;
- LC – MS (High Rezolution LC – MS);
- IEC (Ion-Exchange Chromatograph).



Food Chemistry and Colloidal Biochemistry



4 Infrastructure

Food Chemistry and Colloidal Biochemistry

Main equipments:

- Photochem System for determining the antioxidant potential of food and food ingredients;
- Systems for determining soluble and insoluble food fibers;
- InfraRed systems for determining quality indicators for milk, meat and cereal products;
- High performance equipments for determining of macronutrients.

Main equipments:

- Differential Scanning Calorimeter;
- Dough rheology - Farinograph, Extensograph, Amylograph, Alveograph, Mixolab.
- Rheometer
- HPLC.



4 Infrastructure

Spectrometry

Main equipments:

- Nuclear Magnetic Resonance (NMR) Spectrometer
- Inductive Coupled Plasma Mass Spectrometer (ICP-MS)
- Graphite oven Atomic Absorption Spectrometer (GF-AAS)
- Flame Atomic Absorption Spectrometer (F-AAS)

Expertize:

- Detection and dosing of chemical compounds in the food matrix without the need for a complex preparatory step;
- Food fraud through investigations, authentication and detection of adulterations;
- Detection and quantification of heavy metals in food, feed and materials in contact with food;
- Safety assessment and expertise of dietary supplements.



4 Infrastructure

Main equipments:

- Electronic nose α - Prometheus
- Instron texture analyzer 5542
- Colorimeter

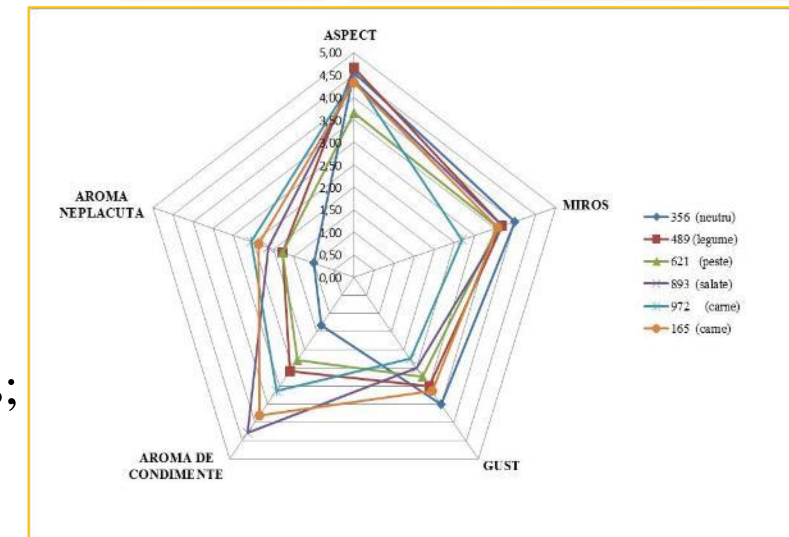


Sensorial analysis



Expertize:

- Origin authentication/fraud detection of food products by volatile compounds fingerprint - wine, fruit, traditional products;
- Detection of counterfeit chemical compounds in the food matrix without the need for a complex preparatory step;
- Testing the sensory attributes of new foods by panelists;
- Assessing the food acceptability/preference by consumers;
- Studying food structure and texture.

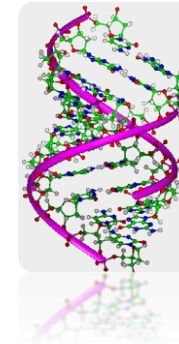


4 Infrastructure

Molecular Biology

Main equipments

- Real-time multiplex PCR (Corbett RotorGene 6000);
- Real-time multiplex PCR (BioRad IQ5);
- Vertical and horizontal Electroforesis.



Expertize:

- Identification / authentication of crop species / varieties (cereals, vegetables, fruits, vines, etc.) and zootechnical species / breeds, as well as foods/ingredients derived from these;
- Identification and quantification of genetically modified organisms and food/ ingredients derived from these;
- Identification and quantification of bacterial species (pathogenic, alteration or industrial use).



4 Infrastructure

Microbiology-Elisa



Main equipments:

- Bioreactor (Applikon, 2L capacity);
- Biochemical printing system (Biolog);
- Multiplex enumeration system (MicroFoss);
- ELISA system.

Expertize:

- Microbiological food safety investigations, (pathogen identification and counting, pathogen inactivation testing), food and food-package micro-ecology;
- Development and optimization of fermentative processes for food processing;
- Sanitation and food hygiene tests;
- Mycotoxins, allergens, vitamins, GMOs.

4 Infrastructure

Food Packaging

Main equipments:

- Apparatus for determining the water vapor permeability of flexible films;
- Apparatus for determining gas permeability (O_2 , CO_2 , N_2) of flexible films;
- Instron equipment for determining the physical-mechanical properties of food contact materials.

Expertize:

- Evaluation of water vapor and gas barrier properties of flexible films intended for food packaging;
- Evaluation of the physical-mechanical properties of food contact materials (strength, resistance, elongation resistance, etc.);
- Interactions between food and food contact materials.



4 Infrastructure

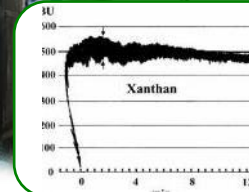
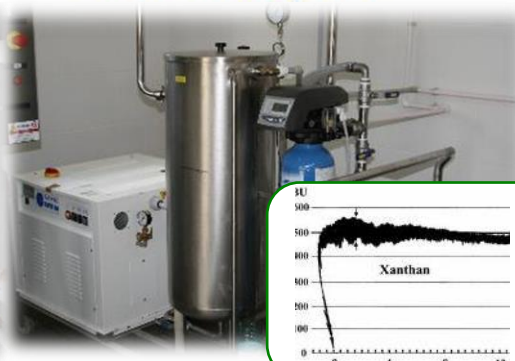
Fruits and vegetables based products Pilot Plant



Gem de Aronia, mere și morcovi



Gem de Aronia și mere



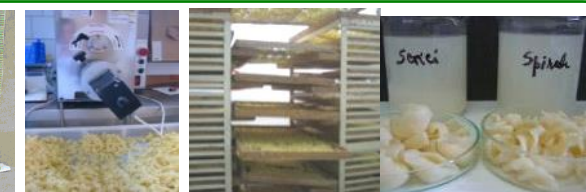
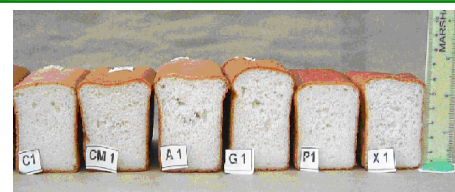
Cereal based products Pilot Plant



Biscuți fortificați cu făină din deșeurile de tomate



Prăjitură fortificată cu făină din tescovină de struguri negri



4 Infrastructure

National Service of Aromatic and Medicinal Plants and Bee Products

Expertize:

Quality and technologies of Aromatic and Medicinal Plants - bioactive compounds, toxicity, harvesting, processing;
Data about using of aromatic and medicinal plants and bee products in food supplements;
Romanian producers, importers of food supplements on the Romanian market;
Nutritional claims;
Food supplements and food Labelling.

Human resources Development

Expertize:

Structural Funds projects in professional trainings
Competence evaluation

Meat processing Pilot Plant



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Research, innovation and technology transfer activities

2 departments are supporting research and innovation activities, such as:

IBA Support: it was established thanks to the recently finalized EU-funded project, the *Creation of the "IBA Support" Management Center* (SMIS 108234)

Its primary objective is to train a team in the preparation and management of EU and international research projects.

Technology Transfer Center (CTT): focused on technology and knowledge transfer to food business operators (authorized by MCID).

CTT collaborates with various stakeholders in the food system, including the food industry, NGOs, clusters, federations, associations, and policymakers

Valorization:

The analysis methods and protocols are used in IBA Bucharest's own laboratories or after ANSVSA authorization and RENAR accreditation within the Department for Quality Control of Agri-Food Products by offering laboratory services;

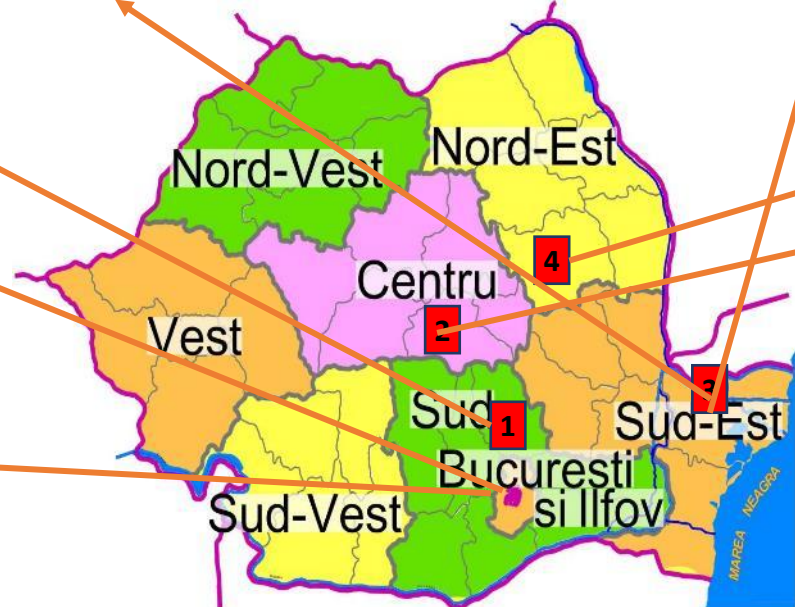
New food products and technologies are taken by companies, partners in the projects, or can be contractually transferred to food processing companies;

The studies carried out can be used for course development for Food Business operators or can be used for different publications (articles, books or book chapters) and scientific communications.

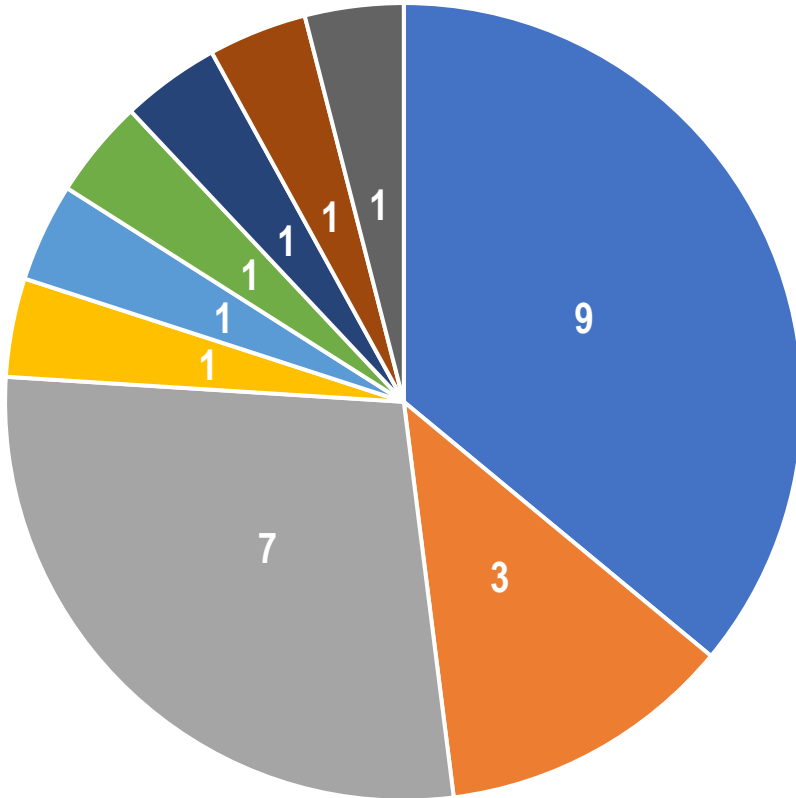
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Research, innovation and technology transfer activities

Contract 57/2016, Valorization of IBA's expertise in agrifood research through knowledge transfer to the private sector in order to obtain safe and nutritionally optimized food products (**Expertal**), 2016-2022: 25 projects with industry



Food Business operators requests



- Bakery products
- Meat products
- Food supplements
- Edibles oils
- Fruits and vegetables processed
- Honey and bees products
- Food ingredients
- Berries products
- IT service



ACTIVEIMMUNITY
Simply People Science.





EXPERTAL

EXPERTIZĂ OCTOMBRIE BA RUCIȘTI

“Vitorificarea expertizei în cercetarea agroalimentară prin transfer de cunoștințe către mediul privat în vederea obținerii de produse alimentare sigure și optimizate nutrițional!”

Proiect cofinanțat din Fondul Regional pentru Dezvoltare Regională prin Programul Operațional Competitivitate 2014-2020

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Strategic collaborations

National – the main interests

1. METROFOOD-RO partners (8)
2. Universitatea Națională de Știință și Tehnologie, Politehnica București
3. National institutes with complementary expertise
4. Institute under the Academy of Agricultural and Forestry Sciences - ASAS

International

ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development; CNR - National Research Council, Italy;
SCIENSANO, Belgium; ILVO, Belgium; UGENT, Belgium;
CTNC - Centro Tecnológico Nacional de la Conserva, Spain;
CZU/CULS - The Czech University of Life Sciences Prague;
ISPA – CNR - ISPA · Istituto di Scienze delle Produzioni Alimentari
TUM – Technical University of Munich;
Wageningen Food Safety Research, the Netherlands;
NTNU - Norwegian University of Science and Technology;
JSI - The Jožef Stefan Institute, Slovenia;
VTT - Technical Research Centre of Finland;

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