



UNIUNEA EUROPEANĂ



Instrumente Structurale  
2014-2020

# METRO FOOD • RO



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# Romanian Node Services, Industrial Beneficiaries

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# Introduction

- METROFOOD-RO national node helps companies from the food industry for delivering high-quality, safe, and compliant products to the Romanian market. The highly qualified analysts from the METROFOOD-RO network ensure that the tested products meet the expectations of customers and respect the requirements set by regulatory authorities.
- Safety, quality, authenticity, and nutrition are key elements for a modern food industry, because consumers want authentic, nutritious, high quality and, above all, safe products.
- The laboratories are equipped with the latest analytical techniques (mass spectrometry, chromatography, spectroscopy), ensuring the highest levels of accuracy and efficiency.
- METROFOOD-RO laboratories want to develop and validate methods suitable for many others analytes and matrices.
- The services provided by METROFOOD-RO can be grouped in 6 directions:
  - Food safety
  - Food authenticity
  - Nutritional quality of food
  - Food quality
  - Characterization of food contact materials
  - Quality of agroecosystems

METROFOOD-RO is a leader in protecting the food chain; the laboratories of the national node can determine the presence of **contaminants** (physical, chemical or microbiological), **allergens**, **GMO products** ensuring the safety of food products

Food safety

Determination of composition, purity, origin by **molecular biology techniques** (species, variety, etc.), **stable isotope analysis** (origin identification).

Food authenticity

The physico-chemical properties of various food matrices ensure the quality and integrity of agri-food products, to support the health of consumers.

Food quality

Nutritional quality ensures the quantity of the essential nutrients, in food or diet concerning the requirements of their consumption.

Nutritional quality

Determination of the safety of FCM and FCA intended for contact with food, by various techniques, according to national/European legislation, as well determination of the chemical composition by FTIR

Characterization of FCM and FCA

Determination of soil, water and air quality for a sustainable agricultural system

Environment quality

# Food safety services

Heavy metals (GF-AAS, TD-AAS), organochlorine pesticides (GC-MS, GC-ECD), dioxins and furans (GC-MS), polycyclic aromatic hydrocarbons (HPLC/FLD), **acrylamide (GC-MS/MS) \***, mycotoxin: **DON\***, **AF\***, **ZEN\***, **OTA\***, AFM1 (ELISA), AFB1, AFB2 (LC-FLD), **patulin\* (HPLC/DAD)**, antibiotic residues (GC-MS), hormone residues (LC-MS), food additives (preservatives, artificial colors, sweeteners).



*Listeria monocytogenes\**, *Escherichia coli\**, *Staphylococcus aureus\**, *Salmonella\**, *Bacillus cereus*, *Bacillus mesentericus*, *Enterobacteriaceae\**, total number of germs (TNG), coliform bacteria\*, yeasts and molds\*, identification of lactic acid bacteria, sanitation tests (food packaging, surfaces and employees)\*.

\*



# Food authenticity services

- Detection of cow's milk in sheep and goat milk and cheeses (ELISA)
- Detection and quantification of cattle, chicken, pig and horse DNA (RT-PCR)
- Detection and quantification of soybean vegetable protein (RT-PCR)
- Isotopic and elemental fingerprinting of Romanian mineral waters and alcoholic beverages (spirits and beer) (IRMS)



\* - Accredited RENAR test

# Nutritional quality of food services

- **Proteins\***, **Fibers\***, **Fats\***, Carbohydrates, **Salt\***, **Sugar\***
- Evaluation of nutritional and energetic value
- Vitamins: B1; B6; B2; C; A; E (LC-MS, ELISA)
- Minerals (AAS)
- Lipid profile from vegetable oils and food matrices (NMR)
- Fatty acid profile (GC-MS)
- Amino acid content (LC-MS)



# Food quality services – food products

- Rheological properties (**farinograph\***, alveograph, extensograph, amylograph) (wheat and wheat flour)
- **Wet gluten and glutemic index\***
- Boiling behavior (flour pasta)
- Rising power (baker's yeast)
- Peroxide index (food products, vegetable fats), saponification index (vegetable fats)
- Index Zeleny
- Floating index (maize)
- Dry matter content (refractometric method)
- Net weight, proportion of components (cans, pastries, biscuits)
- Collagen (meat preparations)
- Organoleptic examination



- Density
- Hectoliter mass\*
- Organoleptic and physico-chemical characteristics of bread and wheat flour (granularity, **porosity\* and elasticity\* of the core, volume of bread and bakery products\***, gluten deformation index)
- **Falling index\*** (wheat, rye and corresponding flours)
- **Water content\***
- **Wheat and seed glassiness\***
- **Ash content\***
- **Acidity\*** (sweets, milk, dairy products, margarine, vegetable oils and fats)
- Titratable acidity (Food products)
- Alkalinity (Biscuits)
- Soaking time (pretzels)
- Conductivity (food products)
- Antioxidant capacity
- Total polyphenols content

\* - Accredited RENAR test

# Food quality services – alcoholic and non-alcoholic beverages

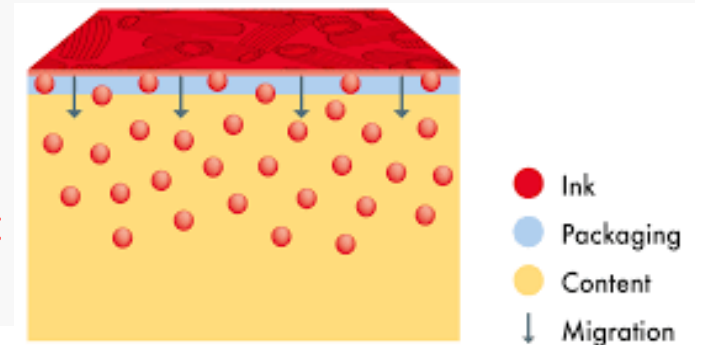
- Density (oils and food beverages)
- Alcohol concentration (alcoholic beverages)\*
- Total and free sulfur dioxide (alcoholic beverages)
- Total dry extract (alcoholic and non-alcoholic beverages)
- Acetaldehyde, methanol (alcoholic beverages)
- Volatile acidity (alcoholic beverages)
- Water content in oils
- Peroxide index, saponification index (oils)



# Characterization of FCA and FCM services

- Overall migration tests (A, B, C, D, D1 and D2) for plastics\*, paper/cardboard\*, metallic materials, biodegradable materials, etc.
- Water soluble substances from paper and cardboard\*
- Specific migration: Bisphenol A, Formaldehyde, dyes (UV-VIS)
- Metal migration: Ba, Co, Cu, Zn, Mn, Al, Ni, Li, Fe, Pb, Cd, Cr, Sb (ICP-MS)
- Odor release tests\*
- Heavy metal content: Pb, Cd, Cr (ICP-MS)
- Barrier properties: O<sub>2</sub>, CO<sub>2</sub> and water vapors
- Mechanical properties: breaking strength, elastic modulus
- Identification of polymers from plastics (FTIR)

\* - Accredited RENAR test





# Agroecosystem quality services



**Chemical contaminants:** heavy metals (FAAS)\*, petroleum hydrocarbons and mineral oils (GC-MS)\*, organochlorine insecticides\*, polychlorinated biphenyls\*.

**Physico-chemical analyses:** water content, pH\*.



Suspended dust\*, mass fraction of PM<sub>10</sub> or PM<sub>2.5</sub> of suspended particles\*, gas concentrations (O<sub>2</sub>, CO<sub>2</sub>, CO, SO<sub>2</sub>, NO, NO<sub>2</sub>)\*, volatile organic compounds (VOC).



**Chemical contaminants:** heavy metals (ICP-MS)\*, ammonium\*, phenol\*, polycyclic aromatic hydrocarbons (HPLC)\*, organochlorine insecticides\*, polychlorinated biphenyls\*, volatile halogenated hydrocarbons\*;

**Microbiological contaminants:** *Pseudomonas aeruginosa*, *Escherichia coli*, coliform bacteria, sulfite-reducing anaerobic bacteria, total germ count (TNG);

**Physico-chemical analyses:** pH\*, electrical conductivity\*, extractable substances\*, residue\*, suspended matter\*, chemical oxygen demand (CCO-Cr), total organic carbon content (TOC)\* and organic carbon dissolved (DOC)\*.



Retail



Primary production

Industrial beneficiaries  
of METROFOOD-RO  
services



Distribution and storage

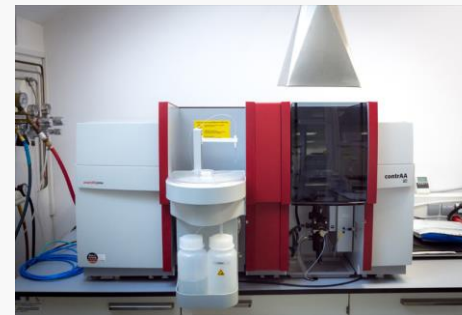
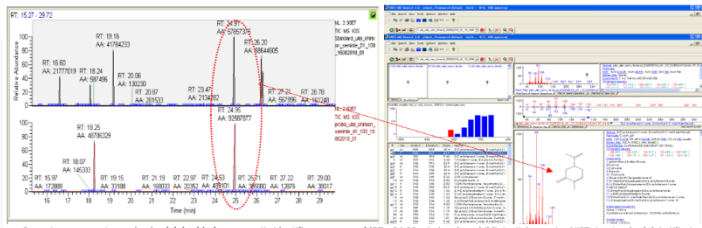


Food processing

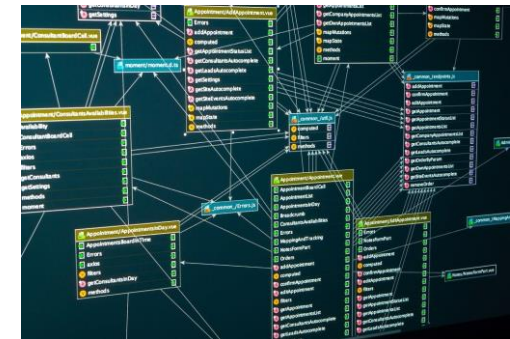
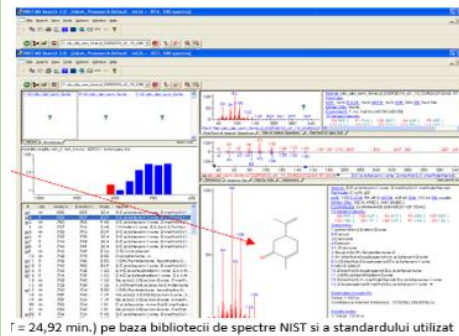


Food packaging





# Types of access to the facilities offered by METROFOOD-RO



# Access to METROFOOD-RO national node services

- **BASIC access**, for regular analyses – free of charge, or at a minimal price that only covers the costs of the analyses;
- **ADVANCED access**, for complex analyses that require important capacities and capabilities - based on a schedule, at accessible costs;
- **COMPLEX access**, for research, development and innovation activities/projects in order to create food products and technologies - academic organizations and companies, from public and private resources. The results will be the property of the industry.



# How to access METROFOOD-RO services?

- **Research:** Industries can participate in research and networking activities to discover service providers in their areas of interest, such as attending conferences, trade shows, and exhibitions.
  - **References and recommendations:** Asking for references and recommendations from other companies or industry contacts can serve as a valuable way to access METROFOOD-RO services.
  - **Professional associations and industry groups:** Joining relevant professional associations and industry groups can provide access to a network of service providers. These associations can help industries find service providers with expertise in the area of interest.
- **Online platforms and marketplaces:** Using online platforms and marketplaces specifically designed to connect companies with service providers can be an efficient way to access services.
  - **Strategic Partnerships:** Industrial beneficiaries may consider forming strategic partnerships with service providers. This can help access to METROFOOD-RO services and resources.
  - **Government programs:** Depending on the industry and location, there may be government programs that support companies in accessing specific services. These programs may provide funding or grants to help cover costs or facilitate access to METROFOOD-RO services.

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