

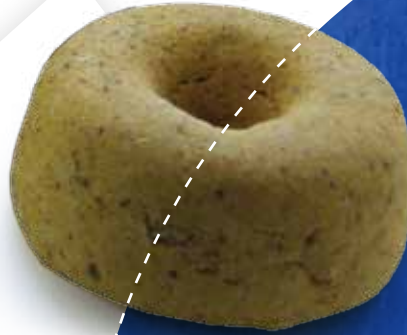
RESEARCH CENTRE
FEED-TO-FOOD



Institute of Food Technology, University of Novi Sad

Funded under "Research Potential" activity
of the EU 7th Framework Programme





RESEARCH PROJECT **“FEED-TO-FOOD”**

Following the signing of the Memorandum of Understanding associating the Republic of Serbia to the Seventh Framework Program of European Community for research, technological development and demonstration activities (2007-2013), our research group took the first chance and we have been awarded the FP7-REGPOT-2007-3 project “Reinforcement of Feed to Food Research Centre at Institute of Food Technology of the University of Novi Sad”.



ALL PROJECT OBJECTIVES ARE ACHIEVED

- Research capacities are improved by:
 - o Purchase of new equipment
 - o Employment of young researchers
- Closer S&T cooperation is established between project beneficiaries:
 - o Western Balkan Countries –WBC (Serbia)
 - o EU member States (Germany and France), and
 - o EU regions of convergence (Romania and Lithuania)
- Networking with EU research institutions is increased;
- Exchange of research experience is constantly in progress;
- Great experience in how to take part in EU research projects is obtained;
- Participation in FP7 and some other international project is provided;
- Visibility of Research Center FEED-TO-FOOD is greatly increased through dissemination and promotional activities;

Project Acronym: **FEED-TO-FOOD**
Type of funding scheme: **Coordination and support actions (Support)**
Funded under: **FP7-REGPOT-2007-3**
Grant agreement no: **207043**
Duration: **01.02.2008. – 31.08.2011.**
Coordinator: **Dr Jovanka Lević**
Project officer: **Dr Irmela Brach**
Project website: **www.feed-to-food.uns.ac.rs**

**OBJECTIVES WERE
ACHIEVED IN
COOPERATION
WITH PROJECT
BENEFICIARIES:**



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By proposing this project we wanted to confirm our regional reputation and to upgrade own research potentials to EU level. Under different type of activities, through FEED-TO-FOOD project, we attained European standards as scientific link in the production chain from feed to food. Now, besides tradition and regional recognition, we have respectable reinforced research potential to fulfill stringent demands indicated in new FP7 and other EC calls and we are competent to take important role in European Research Area. Research Centre FEED-TO-FOOD is widely recognized as the leader in feed technology and it is ready to participate and assist in successful integration of Serbia, other West Balkan Countries and the whole region into the Europe.





STRATEGICAL IMPORTANCE

Research Centre FEED-TO-FOOD has an explicit strategic importance. Agriculture is one of the principal business affairs in WBC region and also in Serbia. Agriculture and food is one of seven national R&D priorities defined in "Scientific and Technological Development Strategy of the Republic of Serbia 2009 to 2014". Knowledge advancement in sustainable management, production and use of biological resources and development of new technologies and products in the food processing industry are some of the priority topics in this strategy, harmonized with "National strategy of economic development of the Republic of Serbia from 2006 to 2012", "National program of agriculture in Serbia 2009-2011" and fully compatible with the directions of the EC.

With intention to establish stronger links among science research organizations in Serbia and building capacities for joint approach to the European Union, Ministry of Science and Technological Development of Serbia planned to form Centers of Excellences in priority areas. FINS is marked as the leading institution in food research area, which will be supported in future programs of development. Established policy dialogue between EC and Serbian Ministry of Science and Technological development and FP7 project funded by EC, enabled us to begin our development and achieve EU level before other research groups.

WHO WE ARE...

FEED-TO-FOOD Research Center with proven high level of Scientific and Technological capacities exists as the independent working unit for 46 years, and now it acts as a part of Institute of Food Technology (FINS) at the University of Novi Sad, Serbia. It was the only research institution specialized for feed technology in former Yugoslavia, and it is still unique organization of that type in Southeast Europe.

OUR STRENGTHS

- Long tradition
- Unique research center in SE Europe
- Leading position in the region
- Visibility at EU level
- Strong networking at EU level
- Proven high level of research capabilities
- Experienced researchers
- Young team with international experience
- New equipment for feed technologies
- Laboratories for feed evaluation
- Location in Novi Sad, the main centre of Serbian food and agricultural research
- Good connections with feed producers, policy makers and other stakeholders

OUR ACTIVITIES

- Research
- Knowledge transfer and innovations
- Networking (science, policy and industry)
- Services, consulting and assessments
- Dissemination

OUR OPPORTUNITIES

- Increasing demands for food and feed
- Agriculture and food as priorities in national development strategy
- Competitive research area
- Support through Development policy
- Chance to become center of excellence
- Approach to EU RTD funds

OUR RESEARCH

Feed technology
Feed and food quality and safety
Animal wellbeing
Human health and wellbeing



RESEARCH OBJECTIVES

- Sustainable feed production
- Feed technology
- Working accuracy of production plants
- Development of new and upgrading of existing
 - o Processes
 - o Technologies
 - o Products
- Processing efficiency and optimization
- Quality of feed and food
 - o Chemical
 - o Microbiological
 - o Nutritional
 - o Sensory
 - o Physical and technical
- Safety of feed and food
 - o Contaminants,
 - o Residues
 - o Carry-over
 - o Cross contamination
 - o Traceability

- Inactivation of anti-nutritional factors
- Feed preservation, packaging and storage
- Decontamination measures in order to ensure feed and food safety
- Valorization of new raw materials (including wastes)
- Utilization of agricultural and food byproducts
- Feed formulation
- Designing functional feed and food
- Effects of applying additives (technological, nutritional...)
- Effects of technological processes on feed components
- Environmental issues, monitoring and preservation
- Quality assurance systems.....



SELECTED PROJECTS

- “Development of Technologies for Sustainable Feed Production” TR 20106 Project supported by Ministry of Science and Environmental Protection Serbia (2008-2010)
- “Improving of Technological Processes and Products Quality in Feed Industry”, TR-6877 Project supported by Ministry of Science and Environmental Protection Serbia (2005-2007)
- “Testing working accuracy in Feed Production”, Project supported by Provincial Secretariat of Agriculture of AP Vojvodina (2006-2007)
- “Use of agro-industry by-products as animal feeds”, Project supported by Provincial Secretariat of Science and Technological Development of AP Vojvodina (2006-2007)
- “Good manufacturing practice in feed production”, Project supported by Ministry of Agriculture of Serbia (2006)
- „Feed production technologies safe for animal, people and environment”, Provincial Secretariat of Science and Technological Development of AP Vojvodina (2006-2010)
- “Advancement of Technological Process and Quality of Sunflower Meal”, Project supported by Association of Edible Oil Producers (2002-2007)
- “Plan extracts and acidifiers as alternatives for antibiotics in animal feeding”, Project supported by “Essentico” (2005-2010)

INTERNATIONAL ONGOING PROJECTS

- FP7-REGPOT-2007-3, Reinforcement of feed to food research center at Institute of Food Technology of the University of Novi Sad", Feed-to-Food
- COST Action FA 0802, Feed for Health
- FP7-KBBE-2010-4; KBBE.2010.2.6-01: Strengthening cooperation in food safety, Safe Food for Europe – Coordination of research activities and Dissemination of research results of EC funded food safety
- South East Europe programme (SEE) – Setting up innovation support mechanisms and increasing awareness on the potential of food innovation and RTD in the South-East Europe area



NATIONAL ONGOING PROJECTS (2011-2014)

- III 46012 – Investigation of contemporary biotechnological processes in animal feed production, aimed at increasing food competitiveness, quality, and safety (Coordinator: Dr Jovanka Lević)
- III 46005 – New cereal and pseudo-cereal products from organic production (Coordinator: Dr Maria Bodroža-Solarov)
- III 46009 – Upgrading and development of hygienic and technological processes in production of animal products, in order to achieve quality and safe products, competitive on world market (Coordinator: Dr Lazar Turubatović)
- TR 31034 – Chosen biological hazards for quality and safety of animal origin food, and control measures from farm to consumer, (Coordinator: Prof. Dr. Sava Bunčić)
- TR 31011 – Influence of feed components in ciprinides diet on meat quality, losses, and economy of production (Coordinator: Prof. Dr. Miroslav Ćirković)
- TR 31032 – Development of traditional production of dry fermented sausages with protected designation of origin in order to obtain safe products of standard quality (Coordinator: Prof. Dr. Ljiljana Petrović)

PILOT PLANT FACILITIES

Our pilot plant is available for accurate conducting of production process on a relatively small scale and is able to carefully evaluate each step in production process and to provide valuable data for design of the full-scale plant. Its equipment covers almost every process used in modern feed production plants. It possesses:

- Hammer-mill
- Roller mill
- Pulverizer
- Various mixers
- Steam conditioner
- Expander
- Extruder
- Pellet-press
- Dryer
- Cooler
- Vacuum coater
- Centrifugal separator
- Steam generator



With this equipment it is possible to simulate the whole range of conditions to be found in practice. Accurate dosing and measuring equipment, allows the manipulation of the working parameters along the processing flux and use of the equipment for research-development purposes.





Pilot scale units are supplemented with laboratory equipment for measurement and determination of:

- Process relevant quality characteristics
- Physical characteristic of dry products (grains, powders, meals, pellets...)
 - o Bulk density
 - o Tap density
 - o Flowability
 - o Angle of repose
 - o Particle size
 - o Particle size distribution
 - o Pellet durability
 - o Pellet hardness
- Mixing uniformity
- Segregation
- Carry over and cross-contamination
- Working accuracy
- Viscosity of liquid components
- Water and fat adsorption capacity....



LABORATORIES

The laboratories in the Institute are equipped for performing hundreds of different methods for qualitative and quantitative analyses such as: chemical composition, physical characteristics, functional and sensory properties, rheological behavior and safety aspects of food, feed and other materials and byproducts in food chain.

Sophisticated laboratory equipment is available for research work, meeting the needs of industry, traders, consumers, official inspections etc.

There is also well equipped laboratory for determination of microbiological status of feed and food materials, equipment, working area etc.

Chemical and microbiological laboratory of Institute received its accreditation certificate from Serbian accreditation body following completion of a long process of validation of the methods and providing the continuousness of the improvement.



WE HAVE:

- Liquid Chromatograph -Triple Quadrupole Mass Detector;
- Liquid Chromatograph equipped with Diode-Array Detector, Fluorescence Detector and Evaporative Light Scattering Detector;
- Gas Chromatograph – Mass Spectrometer;
- Gas Chromatograph – with Flame Ionization Detector, Electron Capture Detector;
- Atomic Absorption Spectrophotometer
- Protein bioanalyser on chip;
- Spectrophotometer
- Calorimeter
- Instron texture system
- Electrophoresis
- Elisa
- Modular advanced rheometric system (shear, dynamic, oscillatory and extensional rheology)
- Equipment for sensory analyses, etc.



KNOWLEDGE TRANSFER AND INNOVATIONS

Topics of our research projects are always directed towards possible innovations in feed to food chain. For business purposes we attune our research and other activities to the individual needs of our clients through:

- Short term research
- Industrial research partnerships
- Applied troubleshooting
- Training & advice
- Specialists analysis
- On-site auditing.....

Results gained through our own research-scientific work, already existing knowledge as well as world-wide advancements are applied in Serbian industry through wide cooperation with feed and food producers. To meet the needs of industry, Research Centre Feed to Food offers:

- Setting and reviewing of technological processes
 - o Selection of technological processes that will be used
 - o Adjustment of technological lines
 - o Selection of equipment
- Preparation of project documentation for feed manufacturing
 - o Preliminary studies
 - o Development plans
 - o Investment programmes
 - o Conceptual designs
 - o Final technological designs
 - o Master plans
 - o Technical control and monitoring of the project implementation
 - o Technological supervision during construction
 - o Commissioning

Our researchers interact with colleagues from the industry, policy makers and different stakeholders at meetings which provide opportunity for discussion about research and development strategies, technical problems, quality management, actual and future legislative etc...





SERVICES, CONSULTING AND ASSESSMENTS

Professional and advisory collaboration are directed to:

- Evaluation of:
 - o Technological and other effects of feed additives
 - o Process and storage behaviour of feed
 - o Process and storage stability of sensitive components
 - o Safety management and working accuracy (mixing, segregation, carry over..)
 - o Mixing uniformity
 - o Capacities
 - o Retention time
- Introduction and implementation of quality management systems in industry (GMP, GHP, ISO, HACCP)
- Elaboration of studies and expertise
- Production programs (feed formulations, product specifications and labels for compound feed, premixes etc.) for all animal species and categories
- Determination of nutritional and other characteristics of feedstuffs
- Animal trials
- Tests and analysis necessary for official product registration
- Feed quality tests and analysis (chemical, physical and microbiological) in accredited laboratory
- Practical training programs for feed producers
- Consultancy on the implementation of current regulations
- Demonstration of some processes
- Presentation of developed and innovative technologies

NETWORKING

Research Centre Feed to Food is an active member of FOOD CLUSTER INITIATIVE of EC created by EC (DG RTD-B.4 - Regions of Knowledge and Research Potential). This activity helps us to build partnerships across Europe, obtain information, exchange knowledge and experience, and improve our future activities through food sector networking. The FOOD-CLUSTER is currently composed of 15 projects with 43 partners and with the ambition to establish EU consortia in food science - in fact building the ERA in Food. Participating countries are EU-27, the Western Balkan Countries and Turkey.

As the result of international cooperation Research Centre FEED-TO-FOOD has become a member of European Feed Technology Center – EUFETEC and eminent EU Institutes accepted us as the participant in several proposed FP7 projects. Membership in EUFETEC enabled us to become one of the organizers of the FIAAP conference at VIC-TAM fair in Cologne – Germany, in May 2011 and to make closer connection with EU research area.



Research Centre Feed to Food has close connections with EU Technological platform “Food for Life” and is initiator and active member in establishment of Serbian Platform.

We are taking part at EC workshops and conferences, in order to be informed about EC activities and realization of FP6 and FP7 projects which are related to our research area and in order to promote our project funded by EC (“Reinforcement of Research Centre Feed to Food”).

Research Centre Feed to Food has been recognized as an organizer and participant of different associations in the field of food and feed processing and also as an active stakeholder and expert in many working groups established by Government or Chamber of Commerce of Serbia in order to harmonize national regulations with EU legislation and also to help in creating programs for development in the production chain from feed to food.

Research Centre Feed to Food is the active exponent of Serbian feed producers in:

- European Feed Manufacturers Federation (FEFAC)
- International Feed Industry Federation (IFIF)

In the scope of FP7-REGPOT-2007-3 project activities, very productive communication was achieved among project beneficiaries, which certainly will be continued after project ending.

Research Centre Feed to Food has established a contracted collaboration with Research Institutes and Universities in Romania, Croatia, Bulgaria, Russia, Syria and Ukraine and informal but fruitful cooperation in United States, Norway, Slovakia, Poland, Greece and in all former republics of Yugoslavia.

Through enabling the establishment of the links within the regional research efforts, we promote peaceful cooperation between the countries in the region, defining common areas of stability and contribute to the wider social integration (not just scientific) of the WBC that could be regarded as one of the most heterogeneous area of Europe, where the cultural and religious differences still divide the populations living across the newly drawn borderlines.

DISSEMINATION



Dissemination activities which ensure increased visibility of Research Center Feed to Food have been done through a number of promotional material (leaflets, brochures), web sites, newspapers, television, radio and other promotional tools. Our research potentials are visible through organization of national and international conferences as well as through activities of FOOD CLUSTER INITIATIVE and other networking projects and scientific meetings in which Research Centre Feed to Food have already taken part.

The effort was also made in stimulating public sector of the state (regional and local government bodies and agencies) as well as industrial and citizen's groups, to improve communications, coordination and collaboration at local, regional, national and international level.

KNOWLEDGE EXCHANGE

Since 2005, Research Centre Feed to Food organized three International Symposiums, two Workshops and the Food Congress by main topics on food and feed technology quality and safety. Participants from universities, institutes, laboratories, governmental organizations, agencies, feed industry and other stakeholders attended these meetings and have opportunity to make new contacts with researchers from many European countries and from USA and China. Lecturers from almost 30 countries were presenting their research results. They brought new ideas for the future research or industrial activities related to feed to food chain. Connection between experts and scientists was one of the most important additional goals of these meetings.



STAFF



Currently, a total of 15 people are employed at Research Centre Feed to Food. Researchers are food technologists, biologists and chemists.



Jovanka Lević, PhD – Team leader (Director of the Institute)
Slavica Sredanović, MSc – Head of Research Centre Feed to Food
Olivera Đuragić, MSc – Head of feed technological laboratory
Slavko Filipović, PhD
Šandor Kormanjoš, PhD
Đorđe Okanović, PhD
Dragan Palić, PhD
Radmilo Čolović, PhD student
Đuro Vukmirović, PhD student
Dušica Ivanov, PhD student
Bojana Kokić, PhD student
Predrag Ikonić, PhD student
Tatjana Tasić, PhD student
Nedeljka Spasevski, MSc student
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