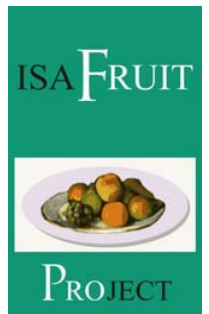


"Food for the 21st Century: How EU Research impacts on food quality and safety" Conference

Projects technical description

Summary

1. **"Two apples a day keep the doctor away"** - **ISAFRUIT** (Increasing fruit consumption and delivering high quality products)
2. **"A unique European-led international network to combat avian flu and other epizootic animal diseases"** - **EPIZONE** (Network of Excellence for Epizootic Disease Diagnosis and Control)
3. **"Dietary impacts on cancer risk"** - **ECNIS** (Environmental Cancer Risk, Nutrition and Individual Susceptibility)
4. **"New tools to understand the links between diet and health, well being and ageing"** - **EUROFIR** (European Food Information Resource)
5. **"Fresher bread on the shops with energy savings"** - **EUFRESHBAKE** (Freshly baked breads with improvement of nutritional quality and low energy demanding for the benefit of the consumer and of the environment)
6. **"Alternative fish feeds for safer seafood, healthy consumers and a greener planet"** - **AQUAMAX** (Sustainable Aquafeeds to Maximise the Health Benefits of Farmed Fish for Consumers)
7. **"Cereals as a weapon against metabolic disorders"**- **HEALTHGRAIN** (Exploiting Bioactivity of European Cereal Grains for Improved Nutrition and Health Benefits)
8. **"A common approach to food integrity?"** - **MONIQA** (Monitoring and Quality Assurance in the Food Supply Chain)



ISAFRUIT

Increasing Fruit consumption through a transdisciplinary approach leading to High quality produce from environmentally safe, sustainable methods



Since 2006, the ISAFRUIT Project has worked towards increasing fruit consumption in Europe by identifying its obstacles: consumer perceptions, fruit availability, quality and convenience, and environmentally-friendly production. Combining the expertise of over 300 scientists from 60 research and development institutions as well as SMEs in 16 countries across Europe, the USA, and New Zealand, ISAFRUIT is based on a Fork-to-Farm, total fruit chain, approach through which it has investigated characteristics of fruit and fruit product supply chains as well as consumers' behaviours to identify their buying decisions for fruit and

fruit products. Thus, consumer linked sciences are the starting point of ISAFRUIT. Research on quality and health effects of fresh and processed fruit shall stimulate consumer interest in a wider range of healthy products.

Background

Consumption of fruit is important for a healthy diet. It is a goal for European countries to have the citizens consuming more fruit for the sake of reduction of certain health risks. The idea of ISAFRUIT is to fulfill the consumer needs and expectations and increase fruit consumption through consumer satisfaction. Awareness of the health effects of fruit may be a driving force for the consumers, but only if the products meet their expectations. An area of growing concern is the significant number of European consumers who suffer from fruit allergies, an obstacle to increased fruit consumption. Close co-operation among ISAFRUIT scientists (human health experts, fruit geneticists and horticulturists) is addressing this problem.

Objectives

While its long term mission is to improve human health through increased consumption of fruit produced in a sustainable way, ISAFRUIT has for strategic objective to increase fruit consumption, and addressing them by consumer driven preferences. Research has been held on:

- Increased fruit safety
- Convenience fruit products
- Searching consumer preferences and attitudes
- Improving availability of quality fruit and
- Raise consciousness of consumers to consumption of fruit and fruit products

Results

- The multidisciplinary research is in itself a promising outcome of the project.
- Health effects of selected fruits and fruits products on risks factors for cardiovascular disorders.
- Prototype fruit tree sprayer based on new technologies for reduces use of pesticides.
- Consumer perception of quality of peaches, nectarines, processed products and apples.
- Allergenicity of apple and peach.
- Non destructive quality measurements and quality grading perspectives.
- Hot water treatments as replacement of certain pesticide sprays to combat infectious diseases on peach and apple storage and sale.
- Decision support system for the fruit chain with the goal to forecast and maintain product quality.
- New methods and processed products



- Mapping of genes for expected health related bioactive compounds and fruit quality of peach, apricot and apple

Impact

- New processed products of apple and other selected fruit are developed and can be marketed. There are snack-like products, probiotic enriched fruit products and other fruit based products.
- Apple cultivars with low allergy effects are identified
- Hot water treatment can replace the so-called before-storage-pesticide-applications on peach and nectarine and to some extent apple.
- A prototype fruit tree sprayer based on new technologies has the potential to reduce amount of pesticides used to protect the crops.
- Results showing that apple can reduce cholesterol level can motivate consumption of apple and impact on human health.
- New methodology and better efficiency for breeding new fruit varieties meeting the consumer expectations.
- Cooperation with SMEs as research partners delivering input to research processes by providing goods and technologies as well as developing new products (nurseries developing new cultivars, food processors, technical equipment related to fruit storage).

To follow

A comprehensive synopsis of ISAFRUIT achievements and influence on fruit consumption will be presented at the 28th International Horticultural Congress in Lisbon, Portugal, between 22–27 August 2010.

For more information, please visit the website: <http://www.isafruit.org>

Or contact the project coordinator:

Ole Callesen

University of Aarhus

ole.callesen@agrsci.dk

EC Contribution : 13.79 million € **Duration** : 57 months **Starting date** : 1/01/2006

Participants:

University of Aarhus (Denmark), Agroscope Changins- Wädenswil (Switzerland), Danish Institute for Food and Veterinary Research (Denmark), Institut de Recerca i Tecnologia Agroalimentàries (Spain), Institut National Recherche Agronomique (France), Università di Bologna (Italy), The Norwegian Institute of Agricultural and Environmental Research (Norway), Wageningen UR-Applied Plant Research (The Netherlands), Wageningen UR-Plant Research International (The Netherlands), Wageningen UR Agricultural Economics Research Institute (The Netherlands), Research Institute of Pomology and Floriculture (Poland), University of Warwick (UK), University of Gembloux (Belgium), Research Institute of Organic Farming (Switzerland), Danish Cancer Society (Denmark), Bundesanstalt für Züchtungsforschung an Kulturpflanzen (Germany), Kompetenzzentrum Obstbau-Bodensee Bavendorf (Germany), Obstbau Versuchring Jork (Germany), Royal Veterinary and Agricultural University (Denmark), University of Copenhagen (Denmark), Universidad de Lleida (Spain), Universidad Politécnica de Madrid (Spain), University of Oslo (Norway), Consejo Superior de Investigaciones Científicas, SE Aula Dei (Spain), Centre Technique Interprofessionnel Fruits et Légumes (France), Groupe de Recherche en Agriculture biologique, Avignon (France), Agricultural University of Athens (Greece), Istituto Sperimentale di Frutticoltura, Forlì (Italy), Land- und Forstw. Versuchszentrum Laimburg, Auer (Italy), DEIAFA Turin (Italy), University of Padova (Italy), Teagasc, The National Food Center (Ireland), University Medical Centre Groningen (The Netherlands), Technical University of Lodz (Poland), Warschau Agricultural University (Poland), CEMAGREF (France), Agricultural Institute of Slovenia, KIS (Slovenia), East Malling Research. Sta. HRI (UK), Hort Research (New Zealand), University of California, Pomology Department, Davis (USA), Andermatt Biocontrol (Switzerland), Hauert HBG Dünger (Switzerland), Schweizerischer Obstverband (Switzerland), NOVADI, Tree Nursery Consortium (France), Val-de-Vier (France), CIV Consorzio Italiano Vivaisti (Italy), Intrachem Bio Italia (Italy), ISOLCELL (Italy), SACMI (Italy), Fecoam (Spain), Alpex (Poland), Celiko (Poland), Nature's Best (UK Ireland), CSO Ferrara (Italy), Sistemi Elettronici Industriali (Italy), Inova Fruit (The Netherlands), Friesland Foods (The Netherlands), Association Groupe ESA (France), AGROCOM Polska (Poland), Sodexho Nederland (The Netherlands)

EPIZONE

Network on epizootic disease diagnosis and control



EPIZONE is a Network of Excellence comprising 17 institutes of veterinary science, health and agronomy, the FAO and one SME specialised in dissemination of knowledge via Internet. It brings together 12 countries, including over 350 acknowledged experts in animal disease.

The project focus on research in four areas: diagnostics, intervention strategies, epidemiology & surveillance, as well as risk assessment to enhance preparedness, prevention, control and

detection of epizootics (infectious diseases that affect agriculture and aquaculture animals, resulting in economic losses along the whole animal production chain and causing food safety issues and public health concerns), through improved collaboration between these centres of research excellence.

The involvement of China and of the Food and Agriculture Organisation (FAO) give the network a global dimension and ensure that its findings can reach any veterinary scientist or farmer who could benefit from them. The tools apply to tropical epizootics as well as those of more temperate climates. Benefits of epizone primarily concern stakeholders throughout the food supply chain but also the agriculture administrations and biotechnology companies.

Partners maintain networks worldwide, therewith linked to epizone, and most have (inter)national reference -laboratory based tasks for control of epizootics.

The project works to generate a worldwide network of institutes making expertise readily available and spreading excellence.

Given the network structure, the technical resources and the scientific excellence, epizone assures strategically driven state-of-the-art research of world-reknown quality.

Background

Epizootic diseases are infectious diseases that affect large numbers of farm and aquaculture animals. Foot-and-mouth, swine fever and avian flu are among the most well known of these animal epidemics.

They spread rapidly through herds and flocks causing public alarm and significant losses. Nearly everyone in the food supply chain is affected, from producers to consumers, as well as administrators and scientists.

Outbreaks in Europe have had enormous social and economic impact and need to be addressed across the whole production chain of animal-related food.

Effective communication and networking, mobilising the efforts of the top scientists in this field, will be essential to the detection and control of epizootic diseases.



Objectives

The objective of EPIZONE is to improve research on preparedness, prevention, detection, and control of epizootics by improvement of excellence through collaboration.

Results / Impact

Project under execution.

EPIZONE is expected to have the following long-term socio-economic impact:

- Its vertical integration of expertise will support the EU's fork-to-farm approach to food safety;
- It will improve the health of Europe's citizens by producing more quality meat and poultry products;
- It will improve the health and welfare of Europe's farm animals and reduce culling of healthy animals;
- It will minimise economic losses throughout the food chain;
- It will increase public confidence in farm produce.

For more information, please visit the website: <http://www.epizone-eu.net>

Or contact the project coordinator:

Petra van der Laag

Central Veterinary Institute of Wageningen UR, Lelystad, NL

Email: epizone.cvi@wur.nl

EC contribution: 14 million €

Duration: 60 months

Starting Date: 01/06/2006

Partners:

Central Institute for Animal Disease Control (NL), Friedrich-Loeffler Institute (DE), Institute for Animal Health, Pirbright Laboratory (UK), Veterinary Laboratories Agency (UK), Agence Française de Sécurité Sanitaire des Aliments (FR), National Veterinary Institute, Technical University of Denmark (DK), Statens Veterinärmedicinska Anstalt (SE), Centre de Coopération Internationale en Recherche Agronomique pour le Développement (FR), Centre of Animal Health, National Institute for Agriculture and Food Research and Technology (ES), Istituto Zooprofilattico Sperimentale delle Venezie (IT), Lanzhou Veterinary Research Institute CAAS (China), National Veterinary Research Institute (PL), FMD Institute Ankara (Turkey), Veterinary and Agrochemical Research Centre, VAR-CODA-CERVA (BE), Hannover Veterinary School (DE), Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna Brescia (IT), Harbin Veterinary Research Institute CAAS (China), FAO, Food and Agriculture Organization of the United Nations (IT), Digital Value Internet Professionals (NL)

ECNIS

Environmental Cancer risk, Nutrition and Individual Susceptibility



With an estimated 2.9 million new cases and 1.7 million deaths each year, cancer remains a major public health problem in Europe. Human exposure to environmental carcinogens usually occurs over a prolonged period of time, making exposure assessments difficult. To explore the risks associated to these exposures, there has been a rapid increase worldwide in the use of biomarkers to monitor exposure and to determine the resultant biological effects, together with studies of human susceptibility factors.

With 25 partners from 13 member states, the ECNIS Network of Excellence is using exposure biomarkers and disease bio-indicators to study how diet and hereditary factors can influence the risk of cancer from environmental factors. This five year long project has developed and validated bio-markers and bio-indicators for use as short cuts in epidemiological studies on the modulation of cancer risk by diet and the influence of genetic variation on cellular, tissue and organism susceptibility to carcinogens. These studies will provide support for the development of functional foods that protect against DNA damage and cancer.

The project aims at developing and standardising procedures for cancer risk assessment, while identifying significant data gaps and providing directions for future development. Another goal is to use bio-marker data to refine and validate pharmacokinetic and pharmacodynamic models and their potential application in risk assessment protocols.

The ECNIS network promotes high quality research by making use of its partners' multidisciplinary expertise and infrastructure, as well as providing the opportunity to conduct molecular epidemiology research on a Europe wide scale.

Exchange of researchers, sharing of laboratory facilities and joint training activities will lower the cost of research and improve funding opportunities while raising expertise and the level of general knowledge about cancer risk.

Background

Substantial progress has already been made in improving the sensitivity, throughput and applicability of biomarkers of exposure, biological effect and susceptibility, but the promise for improving the health of the public using these tools is far from being realized. Most biomarker methods have not been properly validated yet, either analytically or in the field of human health effects.

In order to address this problem, an integrative effort is required and this is one of the main functions of ECNIS. Since most types of exposure are life-style related and low impact, it is difficult to assess them by using traditional epidemiological methods.

Bio-marker methodology greatly improved understanding of the disease's aetiology and human-exposure sources. Molecular epidemiology, using exposure bio-markers, may considerably improve conventional techniques by reducing misclassification and decreasing the time between exposure and the appearance of an observable effect.



Objectives

The ECNIS Network of Excellence is focused on exploring the potential of biomarkers of exposure as well as bio-indicators of disease to study how diet and hereditary factors can influence environmental cancer risk with the ultimate goal to reduce the cancer burden in Europe. The objectives of ECNIS have been classified into the following four groups of activities:

- **Integrating Activities** aimed at establishing a durable network of strongly collaborating participants, using harmonized integrated resources, data bases, procedures and quality standards.
- **Joint Research Activities**, focused on the exploitation of technological and scientific innovation in a nutrition and molecular cancer epidemiology with a ultimate use for cancer risk.
- **Excellence Activities**, focused on training and mobility programmes for inside and outside network and sharing of acquired knowledge with different stakeholders (researchers, industry, society, regulators, health care etc .)
- **Management Activities**, to establish a functional, flexible management structure that will ensure efficient communication between ECNIS participants, the EC and different stakeholders and that will guide the network towards its ultimate goal of becoming a recognized world-class force.

Results/ Impact

Project under execution

ECNIS has succeeded in accomplishing its vision and mandate. For nearly five years now, the project has brought together some of the best European research groups from 25 institutions in 13 countries active in the area of environmental cancer and its modulation by nutrition and genetic makeup.

ECNIS network has formed an extraordinary multidisciplinary forum for knowledge and expertise exchange for more than 200 participating researchers.

ECNIS funds have been supporting scientific events, including conferences, symposia and workshops – altogether as many as 68 workshops were organised with more than 3,000 attendees. As many as 181 joint publications acknowledging ECNIS were published.

For more information, please visit the website: www.ecnis.org

Or contact the project coordinator:

Rydzyński Konrad

Nofer Institute of Occupational Medicine, Łódź, Poland

Email: nmo@ecnis.org

EC contribution: 11 million €

Duration: 66 months

Starting Date: 01/05/2005

Partners:

Nofer Institute of Occupational Medicine (PL), Finnish Institute of Occupational Health (FI), German Cancer Research Center (DE), University of Copenhagen (DK), Karolinska Institutet (SE), Institute for Scientific Interchange Foundation (IT), The National Hellenic Research Foundation (GR), University of Leicester (UK), National Institute of Environmental Health (HU), Nicolaus Copernicus University, Collegium Medicum in Bydgoszcz (PL), Genetics Research Institute & Ospedale Policlinico (IT), Johannes Gutenberg University (DE), Lund University (SE), Katholiek Universiteit Leuven (BE), Institute of Cancer Research (UK), Maastricht University (NL), Biochemical Institute for Environmental Carcinogens (DE), Catalan Institute of Oncology (ES), Utrecht University, Institute of Risk Assessment Sciences (NL), University of Dundee, Biomedical Research Centre (UK), International Agency for Research on Cancer (FR), NETIX Skrzypczynski, Krzysztofowicz Sp. J. (PL), Vrije University of Brussels (BE), Leocordia AB (SE), Imperial College, London (UK).

EUROFIR

European Food Information Resource Network



Comprising 200 researchers and 50 postgraduate students from 27 European countries, EuroFIR is a Network of Excellence (NoE) on information about the composition of food. This NoE forms a world-leading collaboration on the development and application of a unified, reliable and accessible European Food Information Resource, uniting many national food database compiler organisations with both analytical laboratories that generate the data, and end-users of the data from universities and research institutes specialising in nutrition from all over Europe in a major five-year project (including Israel and Turkey). They are joined by seven SMEs with expertise in IT databases and software development, and disseminating and communicating the results and findings across Europe.

It will be primarily useful to help scientists collaborate in validating the relationships between dietary habits and chronic disease, and to exploit the findings to reduce the medical and social costs of ill health. It will also help the wider community to gain access to nutritional research results and understand their implications for public health nutrition.

Background

The growing recognition of the significance of diet in maintaining human health has generated considerable amounts of research throughout Europe. Food components have been shown to help prevent a range of diseases and to prolong active life, and the search continues to unravel the various effects of different nutrients. Much of the information uncovered by this work was hard to access, although the European Commission has actively encouraged collaboration in several programmes. The establishment of EuroFIR (the European Food Information Resource Network) has helped to create a comprehensive and authoritative European source of food information on nutrients, components and newly emerging bioactive compounds with putative health benefits.

Objectives

- Strengthen scientific and technological excellence in food composition databank systems by integrating at the European level the critical mass of resources and expertise needed to provide European leadership
- Identify and provide new information for missing data for nutrients and biologically active compounds with putative health effects, and covering all food groups
- Spread excellence and enhance the impact of the network in food composition databanks and public health nutrition beyond the boundaries of the partnership through training, and sharing of methods and facilities
- Communicate with, and enter into dialogue with all user and stakeholder groups, in order to establish and deliver user and stakeholder requirements for sustainable and durable food databank systems
- Disseminate and exploit new scientific and technological knowledge in order to strengthen the competitiveness of the European food industry, including SMEs, aiming to help the European food and nutrition industry to grow into knowledge-based industry, targeted at evidence based healthier food production



Results

- Food Composition Databases including:-
 - 51000 foods described
 - 33000 generic products
 - 14000 recipes
 - 4000 branded products
- Standardised vocabulary
- XML format data exchange
- Quality management system
- Database for composition and biological activity of plant bioactive compounds

Impacts

- Distributed network of 26 authoritative EU food composition databases
- Draft EU standard food data CEN/ TC387
- Harmonised global vocabulary, data management, food description
- Training at all levels of expertise, food compilers and students
- Sustainable legal entity EuroFIR AISBL

For more information, please visit the website: www.eurofir.org

Or contact the project coordinator:

Paul Finglas,
Institute of Food Research (UK)
paul.finglas@bbsrc.ac.uk

EC contribution: 12 million €

Duration: 66 months

Starting Date: 01/01/2005

Partners:

Institute of Food Research (UK), Graz University of Technology (Austria), Ghent University (Belgium), Nutrienten België (Belgium), Institute of Reference Materials and Measurements (Belgium), National Center of Public Health Protection (Bulgaria), National Food Institute, Technical University of Denmark (Denmark), National Institute for Health and Welfare (Finland), University of Helsinki (Finland), Agence Française de Sécurité Sanitaire des Aliments (France), Matis Food Research Innovation and Safety (Iceland), Max Rubner Institut (Germany), International Life Sciences Institute, European Branch (Belgium), Verein zur Förderung Technologietransfers an der Hochschule Bremerhaven e.V (Germany), National and Kapodistrian University of Athens (Greece), Agricultural University of Athens (Greece), Wageningen University (The Netherlands), University of Oslo (Norway), National Food and Nutrition Institute (Poland), National Institute of Health (Portugal), University of Vienna (Austria), Centre for Superior Studies on Nutrition and Dietetics (Spain), Institute of Nutrition and Food Technology, University of Granada (Spain), Food Research Institute (Slovenia), Swedish National Food Administration (Sweden), Swedish University of Agricultural Sciences (Sweden), Tübitak Marmara Research Centre (Turkey), British Nutrition Foundation (UK), European Molecular Biology Laboratory European Bioinformatics Institute (UK), The Food and Environment Research Agency (UK), University of Leeds (UK), University of Surrey (UK), University College Cork (Ireland), Ben-Gurion University of the Negev (Israel), National Institute for Food and Nutrition Research (Italy), Istituto per lo Studio e la Prevenzione Oncologia (Italy), Baigent (UK), RIKILT - Institute of Food Safety (The Netherlands), Polytec (Denmark), Food Information Consultancy (UK), State Environmental Health Centre (Lithuania), ETH Zurich (Switzerland), Institute for Medical Research, University of Belgrade (Serbia), Food Centre of Food and Veterinary Service (Latvia), Danish Food Information (Denmark), Foodcon (Belgium), Institute of Public Health and the Environment (The Netherlands), EuroFIR AISBL (Belgium).

EU-FRESHBAKE

Freshly baked breads with improvement of nutritional quality and low energy demanding for the benefit of the consumer and of the environment



Europeans consume over 30 million tonnes of bread every year and almost 50% of it is produced using Bake Off Technology (BOT), a process that accelerates the final preparation of a bakery product. In today industrial bread production, more and more bread is pre-baked bread, produced on an industrial scale and delivered to small, local outlets where the baking process is then completed. However, making bread with BOT uses a lot of energy, and may also affect the nutritional and textural qualities of the bread.

The EU-funded EU-FRESHBAKE project has investigated how BOTs can be improved to consume less energy while producing top quality bread and designed prototype equipment and technologies to slash the amount of energy needed by these processes. Quality wise, research work resulted in new methods to prevent the crust from flaking, for example. Crust quality matters; a survey carried out by the project partners revealed that 62% of a panel of European consumers (five countries) favour freshly-baked bread with a crunchy crust. The impact of BOT in bread aroma has also been identified.

EU-FRESHBAKE research reveals for the first time that frozen partially baked bread has a significantly lower glycaemic index (GI) than conventional bread. According to the project coordinator, Pr Le Bail, this is an important result. Indeed, efforts to reduce the GI are often brought on the recipe. It seems that the processing conditions are as much important. In addition to reducing the energy consumption of BOT, the project partners developed innovative ingredients that are low in chemicals, and creating breads with enhanced nutritional value. Gluten free breads have also been considered. Indeed, cereal intolerance such as Celiac disease affects 0.1% of people in Europe.

BOT is often considered as a non environmental friendly technology. However, in that it offers convenience to the consumer, it offers the unique advantage to reduce wasted staled bread and finally the global energy demand. Thanks to the innovation developed within EU-FRESHBAKE, it has been possible to reduce the baking energy by around 30% (not considering the energy to inject steam in the oven). BOT can now be applied more economically with a third less energy consumption!

Background

This project concerns the BAKE OFF TECHNOLOGY (BOT), which consists in producing bakery goods from industrial refrigerated or frozen bakery goods and to retail them in downtown baking shops OR to make them available in supermarkets for domestic baking. Bread consumption, which is at the base of the human diet is growing very slowly (~ 1%/year), whereas BOT is growing by ca 10%/year. Indeed, the consumer wants freshly baked bread at any time of the day. BOT also concerns preparation of bread at home.

So far, BOT has mainly concentrated its efforts on mass production of plain breads made with white flour and a lower nutritional value.



Frozen partially baked bread is leading the market (>50%), but this product, which is baked two times is energy demanding and addresses quality problems (rapid staling, crust flaking). Gluten free breads are almost absent of the BOT because removing gluten from the formulation of bread is a real challenge. Celiac disease (gut disorder related to gluten allergy) affects ca. 0.1% people in Europe.

Objectives

This project addresses important strategic objectives:

- To develop bread formulations (incl. gluten free breads) with enhanced nutritional value, adapted to the BOT;
- To reduce energy consumption of BOT;
- To develop innovative ingredients that will support these new pathways;
- To develop tools that will permit to extend the findings of the project to future formulations and developments.

Results / Impact

- Optimisation of formulations and process pathways to produce high-quality bread using less energy;
- A low energy oven based on infra red technology has been developed. The results showed that a reduction by 30% of the baking energy has been achieved with a prototype oven (not considering the energy to inject steam in the oven during baking). A patent has been filled in July 2009 in France and should be extended to more countries. Industry partners for licence transfer are searched.
- New formulations to make gluten, gluten-free and organic products;
- A 'Good Practice' guide (brochure) for the BOT industry;
- A conference, with published proceedings, to inform the industry of the results.

EU-FRESHBAKE will have the following long-term socio-economic impacts:

- Reduction in the large amounts of energy presently used in fermentation, baking, freezing and reheating BOT products
- Better quality convenience foods for Europe's consumers
- Improved health benefits for citizens
- New processes and equipment to market.

For more information, please visit the website: <http://www.eu-freshbake.eu>

Or contact the project coordinator:

Alain LE BAIL

ONIRIS, Nantes-Atlantic National College of Veterinary Medicine, Food Science and Engineering (France)

E-mail alain.lebail@oniris-nantes.fr

EC contribution: 2 million €

Duration: 38 months

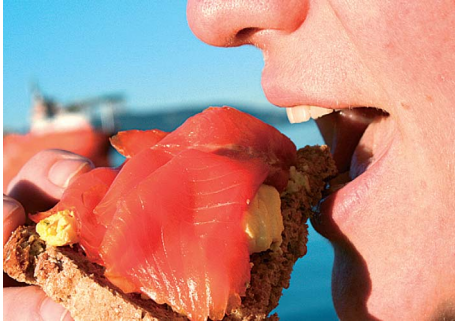
Starting Date: 01/10/2006

Partners:

ONIRIS Nantes-Atlantic National College of Veterinary Medicine, Food Science and Engineering (France), Cemagref (France), Krakow University (Poland), Consejo Superior de Investigaciones Científicas (Spain), Faculty of Food Technology and Biotechnology Zagreb (Croatia), Technologie-Transfer- Zentrum Bremerhaven (Germany), Russian Academy of Science (Russia), MIWE (Germany), Puracor NV (Belgium), Biofournil (France), Bezgluten (Poland), Dr. Schär (Italy)

AQUAMAX

Sustainable Aquafeeds to Maximise the Health Benefits of Farmed Fish for Consumers



With 32 partners from 13 different countries, the integrated project AQUAMAX has for strategic goal to replace as much as possible of the fish meal and fish oil currently used in fish feeds with sustainable, alternative feed resources that are as free of undesirable contaminants as possible. The project aims to include improving contamination detection methods, health benefit assessments for the 'new-diet-based' farmed fish and studies into consumer perception and acceptance.

Background

The European Commission is striving to ensure that the food chain is risk-free at all stages of production and consumption. One of the specific areas of interest is fish feed used in aquaculture across the European Union. Aquaculture constitutes an important sector of European economy, with annual growth rates of approximately 5-9%. In fact, the EU aquaculture industry is second only to its Asian counterpart. As growth of the sector continues, minimizing the potential health hazards associated with fish products has become more urgent. These hazards pertain primarily to marine-derived toxic contaminants of fishmeal or fish oils, entering the food chain through the fish feeds used routinely on a global scale. In 2001, global seafood consumption was estimated at 100 million tons, and a further increase of 65 million tons is expected by the year 2030. It is clear that fisheries will be unable to meet this demand and, as a consequence, the role of aquaculture will become more and more pronounced. To achieve the position where a sustainable aquaculture industry can produce safe and healthy seafood products, the sector has to cope with several important challenges, as shortage of marine resources, the expansion of fish farming which requires the development of sustainable feed resources and the scientific documentation in the whole food chain Environment.

Objectives

The AQUAMAX approach involves initiatives ranging from toxicogenomics and nutrigenomics to a nutritional trial involving pregnant women and infants. The objectives set forth in the project can only be realised through extensive collaboration with a series of partners possessing diverse sets of skills. At the same time, AQUAMAX aims to boost consumer confidence in the sector and its products by addressing a number of concerns in an effective and efficient manner.

The work of the AQUAMAX project is spread over 4 interrelated programmes, corresponding to 4 objectives:

1. Development of feeds based on sustainable alternatives to fish meal and fish oil
2. Health benefits of fish consumption, with a focus on pregnant woman and allergic diseases
3. Safety of fish farmed on the new feeds developed in Aquamax
4. Perception of farmed fish by the public/consumers and the scientists

Results

The AQUAMAX integrated project has:

- developed novel aquafeeds with both fish oil and fish meal largely replaced with sustainable, mainly vegetable materials and tested these new feeds successfully in feeding trials and farm-level demonstrations with salmon, rainbow trout, sea bream and carps;
- developed a finishing diet based on high quality fish oil to ensure where necessary a final product rich in health promoting, long chain n-3 fatty acids;



- shown that the growth performance of fish fed the novel diets and the fish's health and welfare including the impact of veterinary drugs were not notably compromised;
- developed a range of new molecular tools including DNA microchips to understand and assess the performance and metabolic consequences for fish fed the new diets and to explore nutrient x genome interactions;
- developed advanced and applied analytical methodology to ensure that the novel feeds contain minimal or negligible levels of contaminants and to understand the kinetics and effects of transmission of contaminants from feeds to fish and to model organisms, thereby ensuring the safety of the product to the consumer;
- conducted a nutritional trial with salmon fed the new diets in pregnant women, focussing on predictors of atopic disease in early infancy; supported the nutritional trial (in the UK) with a parallel study during pregnancy and early infancy in communities (in China) consuming different amounts and kinds of fish;
- confirmed the quality of fish farmed on the new diets and their acceptance to consumers, and developed a strategy for communicating risks and benefits of the farmed fish to consumers;
- published large numbers of scientific papers in international peer-reviewed journals and extensively disseminated all results and findings in the public domain.

Impact

The primary applications of AquaMax have been to develop new feeds that enhance the sustainability of the industry and that ensure minimal levels of contaminants in the product and hence its safety. The health benefits of fish fed the new feeds and their acceptability to the consumer have been demonstrated. These applications have been underpinned by developing an extensive body of basic and applied scientific knowledge. Thus, AquaMax has substantially enhanced the visibility of European aquaculture and its supporting research and development capabilities and expertise worldwide. Indeed, partners from China and India are working alongside academic and SME participants, combining their expertise through studies on the entire food chain, ranging from toxicological investigations to market validation of the new products. The project's impact is therefore significant, contributing to further growth and new employment opportunities for the EU aquaculture industry.

For more information, please visit the website: <http://www.aquamaxip.eu>

Or contact the project coordinator:

Professor Oyvind Lie

National Institute of Nutrition and Seafood Research (Norway)

E-mail postmottak@nifes.no

EC contribution: 10.5 million €

Duration: 48 months

Starting Date: 01/03/2006

Partners:

National Institute of Nutrition and Seafood Research (NO), Institut National de la Recherche Agronomique (FR), Institute of Aquaculture, University of Stirling (UK), CSIC Institute of Aquaculture Torre la Sal (ES), Hellenic Institute of Marine Research (EL), Res. Inst. for Fisheries, Aquaculture and Irrigation (HU), Biological Res. Centre, Hungarian Academy of Sciences (HU), Nutreco Aquaculture Research Centre (NO), Institute of Marine Research (NO), DDG Fisheries, Indian Council of Agricultural Research (India), University of Southampton (UK), Institute of Nutrition and Food Safety (China), King's College London (UK), University of Granada (ES), University of the Auvergne, Clermont-Ferrand (FR), University of Uppsala (SE), University of Reading (UK), Istituto Superiore di Sanita (IT), Peipsi Centre for Transboundary Cooperation (EE), Selonda Aquaculture S.A. (EL), Halandor Kft (HU), G. Barka Kft (HU), Alpha Mos (FR), WOW Creative Projects Ltd (EL), Landcatch Natural Selection Ltd. (UK), Technology Crops Ltd (UK), Viviers de France (FR), Teutoburger Olmuhle GmbH and Co. KG (DE), Caditec (ES), Marine Harvest International B.V. (NL), Federation of European Aquaculture Producers (BE)

HEALTHGRAIN

Exploiting bioactivity of European cereal grains for improved nutrition and health benefits



The Integrated Project HEALTHGRAIN joins 44 partners from 15 countries working to increase availability of high-quality, health-promoting cereal-based foods, with the goal of increasing the average European citizen's intake of protective compounds of whole grains or their fractions. Cereal foods are an essential part of the daily diet throughout Europe. Nutrition epidemiology research increasingly demonstrates that a diet rich in whole grain and grain fibre based foods protects against development of diet-related disorders such as obesity, cardiovascular disease, and the rapidly expanding epidemic of type 2 diabetes.

Background

Wheat makes up most of Europe's cereal consumption, but usually only in the form of refined white wheat flour in such foods as baked goods, pasta, and breakfast cereals. Wheat milling focuses on flour extraction and, for durum wheat, on semolina, from the endosperm, discarding about 25% of the kernel for use as animal feed. These discarded outer kernel layers (bran and aleurone) and the germ contain dietary fibre and a range of other bioactive compounds such as vitamins and phytochemicals (folate, choline, sterols, tocopherols, alkylresorcinols and phenolic anti-oxidants). Rye grain in whole meal or whole-grain bread has high nutritional value but its taste mainly appeals to Northern and Eastern Europeans only.

Objectives

The 60 month HEALTHGRAIN project has addressed three main issues:

- Identification of mechanisms and cereal food product attributes important for health benefits
- Developing technologies for increasing amounts of grain fibre and bioactive compounds in cereal grains, foods and ingredients
- Enhancing consumer understanding and endorsing the development of healthier products

Results

The project provided created a toolkit of molecular markers as well as antibody based kits and calibrations for use by plant breeders enabling them to develop new cultivars with higher levels of dietary fibre and other bioactives. One of the outcomes was the development of NIR calibrations for soluble and insoluble arabinoxylan fibre and other bioactives to allow analysis of grain and flour samples in breeding and trade T. Tools were also developed for the control of the fractionation process on whole grain, and for producing functionally and nutritionally improved whole grain flours. Industrial feasibility study of 'Healthflour' production revealed that 'Healthflour' has less potential food safety issues than whole wheat flour, but the cost of production are about 4% higher. Breadmaking companies are already showing interest in using this new flour concept.

Wet processing technologies (enzymatic) were developed to extract and impact on the health profile of cereal constituents. Sensory quality of breads prepared with modified flours was studied and improvement could be ensured by peeling the whole grain before the processing stage. Further developments can be made by industry to be able to produce bread with modified flours enriched in certain constituents beneficial for health.



In nutrition studies arabinoxylan has been shown to be bifidogenic and a good producer of butyrate, and it is thus useful for colonic health. Ferulic acid was identified as an important antioxidant of the wheat grain. Products high in aleurone increased betaine levels in blood and decreased homocysteine, a risk factor for heart diseases. These are all examples of the factors which are considered mediators of the health protective effects of grains.

Animal and human studies showed differences between rye and wheat products. Rye products improved insulin economy. Improvement of insulin economy and satiety, obtained with barley kernel or barley fibre based products was related to enhanced colonic fermentation.

Impact

HEALTHGRAIN will provide health professionals with new nutritional tools to combat such diseases as obesity, type 2 diabetes and heart disease,. This will help reduce healthcare expenditures linked to Western lifestyles and ageing populations. Europe produces about 36% of the world's wheat and 94% of its rye, but at a higher cost than many of its competitors. The project will give European grain producers new technologies to develop globally competitive, healthier grain traits, and for the processing industry, including a large number of small and medium-sized enterprises, to develop new, competitive, grain foods that are good for health. These will include foods for individuals sensitive to particular cereal constituents, for example, gluten-free products. Over 40 HEALTHGRAIN related industries, universities, institutes and organisations communicating to consumers have established the HEALTHGRAIN Forum aiming at further pursuing the HEALTHGRAIN objectives after the end of the project.

For more information, please visit the website: www.healthgrain.eu

Or contact the project coordinator:

Kaisa Poutanen,
VTT Technical Research Centre of Finland,
kaisa.poutanen@vtt.fi

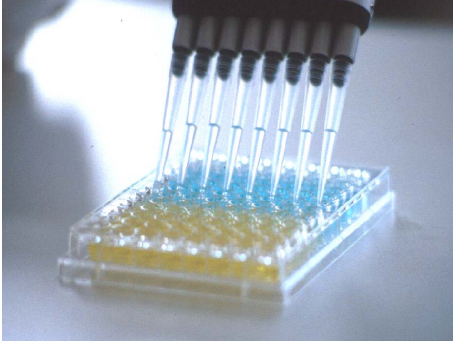
EC Contribution : € 10.8 Million Starting date : 01/062005 Duration : 60 months

Participants:

VTT Technical Research Centre of Finland (Finland), AgroBioInstitute (Bulgaria), ANET - New Media Solutions (Austria), Barilla SpA (Italy), Max Rubner-Institute (Germany), BOKU University of Natural Resources and Applied Life Sciences (Austria), Branscan Limited (UK), Budapest University of Technology and Economics (Hungary), BÜHLER AG (Switzerland), Cereal Chemistry Equipment CVBA (Belgium), University of Aarhus (Denmark), Dprnutrition Ltd(UK), The Technical University of Denmark (Denmark), International Association for Cereal Science and Technology (ICC) (Austria) ,Institute of Food Research (UK), IGV Institut für Getreideverarbeitung GmbH (Germany), Institute of Plant Breeding and Acclimatization (Poland), Institut National de la Recherche Agronomique (France), Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (Italy) ,Katholieke Universiteit Leuven (Belgium), University of Copenhagen (Denmark), Lund University (Sweden), Université de Droit, d'Economie et des Sciences d'Aix-Marseille III (France), Agricultural Research Institute of the Hungarian Academy of Sciences (Hungary), Puracor NV (Belgium), Raisio Nutrition (Finland), Rothamsted Research (UK), Swedish University of Agricultural Sciences (Sweden), SNF Swedish Nutrition Foundation (Sweden), Syral Belgium (Belgium), Tecnoalimenti S.C.p.A. (Italy), Netherlands Organisation for Applied Scientific Research (TNO) (The Netherlands), University College Cork-National University of Ireland (Ireland), University of Helsinki (Finland), University of Eastern Finland (Finland), Maastricht University (The Netherlands), Federico II, University of Naples (Italy), University of Surrey (UK), Università degli Studi della Tuscia (Italy), University of Ulster (UK), Wageningen University (The Netherlands), Öresund Diabetes Team AB (Sweden), Productschap Akkerbouw (The Netherlands), Solides Divises Technologies (France)

MoniQa

Towards the harmonisation of analytical methods for monitoring quality and safety in the food chain



Harmonising worldwide food quality and safety monitoring and control strategies is the goal of the EU-funded MONIQA (Monitoring and Quality Assurance in the food supply chain) project. The initial network of over 155 scientists from 20 countries has grown to over 400 experts from over 35 countries from five continents in the first 24 months and has expanded further in year three to nearly 500 registered experts and 130 institutions.

The MONIQA project aims at making the food chain safer by harmonising the methods used to analyse food for safety and quality. The project partners have created a virtual laboratory

outlining details of food safety issues and the various food testing and analysis methods in use. Through this, the researchers are able to exchange data and knowledge, helping them to develop common strategies which could form the basis of new standards in food quality and safety.

By implementing joint research programmes and promoting exchanges of researchers between the partners, the project partners are developing solutions which will be acceptable to consumers, manufacturers and regulatory bodies as well as other groups involved in the food chain. The researchers are also investigating the food quality and safety implications of new processing technologies, and identifying future research needs. The activities of the various work packages and work groups address analytical challenges, global harmonisation and standardisation efforts, industry needs for rapid and new analytical methods, modern HACCP concepts, databases, and better future regulations. All MoniQA activities are accompanied by relevant training courses and dissemination activities.

Background

Recent problems like BSE, doubts raised by GMOs, the dioxin scare and hormones in imported beef have raised public awareness on the need for assured food quality and safety. With the rise of globalisation, more and more foods and food products are being traded around the world. Ensuring that these foods are of a high quality and safe to eat when they reach the consumer requires reliable food analysis techniques. However, different countries currently use different methods to test foods for the presence of harmful substances in food. Trade liberalisation raises further concern about imported food.

Traceability of food products throughout the European food chain is essential to reassure consumers and safeguard the internal market. Although valuable research is being done on checking food quality and safety in Europe and beyond, it remains fragmented. The results would spread more rapidly with better coordination and data sharing.

Objectives

The MONIQA NoE seeks to establish durable integration of leading research institutions, industrial partners and SMES working in complementary fields of detection and methods for food quality and safety. MONIQA aims at overcoming European and worldwide fragmentation in food quality and safety (Q and S) research by integrating key organisations in a core consortium.

Results/Impact

Project under execution



MONIQA will have the following long-term socio-economic impact:

- It will generate internationally recognised training courses for academia and industry;
- Development of economic models for the food chain;
- Contribution to "better future regulations" for food safety in the EU;
- Support to the prosperity of Europe's food markets;
- Development of technologies that can be exploited by SMEs;
- Raise consumer confidence in food safety.

Scientific significance

The project contributes to the following scientific areas:

- A portfolio of synergetic research to meet emerging global challenges in food quality and safety
- Common strategies for harmonising and validating detection methods and technologies
- Guidelines for risk assessment in monitoring procedures following current and emerging legislation
- Reference materials and validated analytical methods for food safety assessment
- Database of food quality and safety issues and corresponding analytical tools
- Analysis of the implications of new EU food safety regulations for industry, society and the economy.

Project outcomes

- A sustainable network to integrate international research institutions in shared activities
- New standards in food quality and safety, starting in production and eventually extending throughout the food chain
- A report on the long-term modernisation potential of monitoring and quality assurance in the food supply chain
- Exchanges of personnel in laboratories and research centres worldwide
- Training programmes to harmonise levels of skill and know-how.

For more information, please visit the website: <http://www.moniga.org/>

Or contact the project coordinator:

Dr. Roland Ernest Poms
ICC Secretary General
Email: office@icc.or.at

EC contribution: 12.3 million €

Duration: 60 months

Starting Date: 01/02/2007

Partners:

ICC - International Association for Cereal Science and Technology (AU), BOKU - Universität für Bodenkultur Wien (AU), Ain Shams University (Egypt), Campden and Chorleywood Food Research Association (UK), CER - Centre d'Economie Rurale (BE), Eurofins Analytik GmbH (DE), Centro Tecnológico Gaiker (ES), CSL - Central Science Laboratory (UK), Q-Plan - International Quality and Environment Services (GR), Tübitak Marmara Research Center (Turkey), University of Food Technologies (BU), VocalTag (Israel), VTT Technical Research Centre of Finland (FI), University of Napoli, Federico II (Italy), Matforsk - Norwegian Food Research Institute (NO), National Technical University of Athens (GR), National Institute for Public Health and the Environment (NL), Sichuan University (China), Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (IT), Budapest University of Technology and Economics (HU), Institute of Environmental Science and Research (New Zealand), National Food and Nutrition Institute (PL), Hacettepe University (Turkey), CCOA - Chinese Cereals and Oils Association (China), Institut Pertanian Bogor (India), Hanoi University of Technology (Vietnam), IFR - Institute of Food Research (UK), National Research Council (IT), RTD Services (AU), JRC - Joint Research Centre (BE), Rheinische Friedrich-Wilhelms Universität Bonn (DE), Interdisciplinary Centre for Comparative Research in the Social Sciences (AU), University of Bologna (IT)