

Special report

The European Research and Technological Development Programmes concerning food, nutrition and health

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Since the launching of the FLAIR programme (1987–91), which was followed by the AIR programme (1991–4), European food research has been progressively strengthened through the establishment of many partnerships between research institutions, universities and companies from various European countries. In the current FAIR programme (1994–8), 137 research projects have been supported in the food area with European funding of about 125 MECU. These activities contribute to increased competitiveness of the European food industry and to improved health and well-being of the European consumer.

During recent years a number of issues such as the BSE crisis and various food-borne poisoning outbreaks have undermined European consumers' confidence in their food supply. Furthermore, there is an increasing awareness in Europe of the importance of nutrition and diet for a healthy lifestyle. In an effort to address these issues, the EC proposal for the Fifth Framework Programme (FP5) of Research and Technological Development (RTD) activities (1999–2003) has reinforced the importance of food research among the European scientific and technical priorities and included a key-action entitled 'Health, Food and Environmental Factors'.

The FAIR programme (1994–8)

The overall objective of the Agriculture and Fisheries (including agro-industry, food-technologies, forestry, aquaculture and rural development) programme, FAIR (1994–8), was to find a better match between the production and use of biological raw materials. It consisted of five main research and development areas, namely: (1) integrated production and processing chains, (2) scaling-up and processing methodologies, (3) general science and advanced technologies for nutritious foods, (4) agriculture, forestry and rural development, and (5) fisheries and aquaculture.

Within the FAIR programme the food component was divided into four main sub-areas: consumer nutrition and well-being, new and optimized food materials and nutritious food products, advanced and optimized technologies and processes, and generic food science. More specifically, a number of research areas in nutrition were open for research proposals: nutritional inadequacy and bioavailability, role of diet in diseases and disorders, nutritional modulation of

the genetic potential of the individual, physico-chemical aspects of food absorption and metabolism, food consumption trends, consumer behaviour and nutritional status and sensory analysis, functional foods, and food toxicology.

After six calls for proposals, 137 research projects have been selected for funding for a budget of about 125 MECU. In particular, forty-three research projects have been selected in the field of food nutrition and toxicology. Publications concerning the objectives and the participants in these projects are available upon request (URL, <http://www.cordis.lu/fair/home.html>; email, life-fair@dg12.cec.be).

Among the selected projects, a number of concerted actions are bringing together a broad mix of expertise on various relevant issues, e.g. biomarkers of exposure and effect, European disparities in food habits, food allergens, conjugated linoleic acids, phytoestrogens, dietary fats and obesity, sweet taste, etc.

In particular, the FUFLOSE 'Functional Food Science in Europe' concerted action has mobilized more than 130 experts to assess critically the science base concerning functional foods. Several scientific reports have recently been published as a special supplement of the *British Journal of Nutrition* and this action is now recognized worldwide.

Finally, a large European network with national sub-networks (FAIR-FLOW) has been put in place to ensure that research end-users, such as SMEs, consumers and health professionals, have access to the results of Community research projects in the food area.

The Fifth Framework Programme (1999–2003)

The preparation of the FP5 (1999–2003) has been marked by a particular effort of selectivity and concentration on a limited number of areas and objectives, based on the principles of scientific and technological excellence and relevance to European policies. Three categories of criteria have been used for the identification of the major priority research areas: social objectives (employment, quality of life, environment), economic development (growth, competitiveness, technological progress), and European added value (critical mass effect, support to European policies, European issues).

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The structure proposed in the revised Commission proposal (JO C106/1, 6 April 1998) consists of four thematic programmes (quality of life and management of living resources, user-friendly information society, competitive and sustainable growth, and preserving the ecosystem) interrelated with three horizontal programmes (international cooperation, innovation and stimulation of SME participation, and human research potential). Thematic programmes will be implemented mainly through key-actions targeted at socio-economic needs and the Community's policy objectives, supplemented with research and technological development activities of a general nature as well as support to research infrastructures.

One of the proposed key-actions is entitled 'Health, Food and Environmental Factors'. A budget of 500 MECU is foreseen for this key-action which is described in the Commission proposal for the specific programmes, COM(98)305:

The overall goal of this key action is to improve the health of European citizens by providing them with safe, healthy and varied food products and by reducing the negative impact of environmental factors such as air pollution, heavy metals, toxic substances, electromagnetic radiation and noise, as well as the effects of pollution at the workplace. The following scientific and technological objectives will be pursued:

- Development of safe and flexible and new and/or improved manufacturing processes and technologies. The aim is to improve the quality and consumer acceptability of food, while ensuring traceability of raw materials and final products.
RTD priorities: improved use of raw materials, production and processing systems; development of food crops and functional foods; use of fishery by-products and poorly-exploited species; quality and traceability of raw materials and food products in the food chain; minimal processing and process control; advanced food technologies and packaging systems; improvement of traditional technologies; quality monitoring and quality assurance, including the development of methods for measuring quality.
- Development of tests to detect and processes to eliminate infectious and toxic agents. Research will focus on the hazards of contaminants, their exact origins and strategies for safer food production.
RTD properties: improved understanding and control of contamination conditions; rapid detection tests for pathogens, xenobiotics and hormones; new and safer methods of food production; new methodologies for assessing microbial, chemical and allergenic risks.
- Research into the role of food in promoting and sustaining health with respect to diet and nutrition, toxicology, epidemiology, environmental interaction, consumer choice and public health. The aim is to reduce diet-related risk factors contributing to chronic disease and to develop new approaches for improved nutrition and more balanced diets.
RTD priorities: the role and impact of food and diet on

physiological functions, and physical and mental performance; the particular nutritional needs of defined population groups; links between diet and chronic diseases and disorders including genetic factors involved; consumer protection, attitudes and reactions with regard to food products, food-processing methods and labelling.

- Research into diseases and allergies related to or influenced by the environment, and their treatment and prevention. The focus is on health impairment caused directly by exposure to the environment and on ways of treatment and prevention, based on sound epidemiological data and an understanding of pathogenesis mechanisms.
RTD priorities: analysis and quantification of the impact of environmental factors on human health; assessment of the relative importance of, and the interactions between, factors impinging on health; improved understanding of the interrelations between environmental and public-health indicators for better treatment and prevention; development of an integrated approach to risk assessment taking into account environmental and public-health aspects.
- Development of new methods of diagnosis, risk assessment and processes to reduce causes and harmful environmental health effects. The objective is to use a multi-disciplinary approach for better understanding of the interactions between the social and physical environment and health and to improve the identification of vulnerable groups to environmental exposures, and to identify preventive measures in order to reduce causes and environmental factors hazardous to health.
RTD priorities: bio-markers (including bio-indicators) of environmental exposure, effect and/or susceptibility to environmental agents, including mixed exposures and cumulative effects; improvement of predictive toxicity testing and mechanism-based risk assessment aiming at an eventual reduction, refinement and replacement of animal testing; improved methods and technologies for long- and short-term exposure and effects assessment; epidemiological and biomedical studies on possible effects linked to non-ionizing irradiation, particularly from cellular phones.

The revised Commission proposal for the FP5 and the proposals for the seven specific programmes are currently being examined at the Council of European Research Ministers and the European Parliament and should be adopted before the end of 1998.

With regard to management issues, External Advisory Groups (EAG), consisting of twenty members appointed on a personal basis, will be established to provide the Commission with independent advice concerning the content and direction of research work to be carried out under the key action of FP5. The EAG will be established in November 1998 and their first task will be to give advice on the content of the FP5 work programmes. The first calls for proposal will be launched shortly after, probably at the very beginning of 1999.

More information regarding implementation modalities are available on the Commission website: URL: <http://www.cordis.lu/fair/home.html>