

Training and Career Development Network

The Training and Career Development (TCD) Network of NovelQ has been established to create enthusiasm, self-confidence and to pass on knowledge to young people within NovelQ. Training Activities are related to dissemination of knowledge in scientific and technological areas. Career Development Activities relate to all other activities designed to equip young researchers with a broad skill base relevant to effective career development in the European Research Arena. The TCD Network is willing to share expertise with young scientists - either at research organisations or industry - outside the NovelQ consortium.

Partners

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Contact

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Novel Processing Methods for the Production and Distribution of High-Quality and Safe Foods

Integrated Project, no. FOOD-CT-2005-015710
6th Framework programme, priority 5 Food Quality and Safety

Starting date: 1 March 2006
Duration: 5 years
European Commission funding: 10.9 million Euro

Summary

Since March 1 2006, thirty six project partners have joined forces in the new EU-funded Integrated Project "NovelQ" which is designed to stimulate incremental innovations in novel food processing and packaging. In this project, integrated strategic solutions for technical and basic research hurdles will be formulated for complex, real food products rather than food constituents.

Enhancements to the state of the art of novel processes will focus on high pressure processing (HPP) for sterilisation of food, quantitative studies on the effect of pulsed electrical fields (PEF) on food pathogens and cold plasma as a surface disinfecting method. Other innovative topics include coupling of new packaging concepts to novel processing and solving R&D hurdles in implementation of advanced heating technologies, such as microwave, ohmic heating and radio frequency.

Key scientific emphasis is put on plant-based products, both solid and liquids, including carrot, tomato, strawberry, apple and broccoli. These commodities have been selected because they integrate food structure issues, colour and flavour-related aspects, health-related components, including allergens, and food safety issues. However, the anticipated results will have broad applicability to other type of products, to the level of whole meals – including regional recipes that are typical of the rich and diverse European cuisine. To most effectively address these opportunities, further knowledge on consumer perception is crucial.

European Novel Food legislation (EU-258/97) requires that detailed studies of the impact of novel processes and packaging on safety and nutritional value of food products be conducted. Such a requirement poses significant difficulties to multinationals, because the studies are complex and difficult to carry out given the relatively short time-to-market cycles of the industry. The situation is worse for SMEs, where these requirements represent a major obstacle to innovation and market growth, because of high costs and time-consuming studies and negotiations. Attention will, therefore, be paid to determining how best to deal with these obstacles in order to strengthen employment within this innovative sector.



Technologies



High Pressure

In this project, high pressure processing research starts from a rather mature level as regards both food science and equipment developments geared towards pasteurisation processes. The first step will be the extension of the current state of the art towards an integrated modelling approach (including safety, quality and packaging aspects). The second step will include sterilisation processes (shelf stable foods) in addition to pasteurisation.



Pulsed Electric Field

Pulsed electric field research starts from a semi-mature level both in food science as well as equipment developments. There is a clear need for further understanding of safety and quality related aspects for food matrices as well as food-electrode reactions. Also, several applications for PEF will be addressed, including cost-effectiveness and environmental impact.



Cold Plasma

Cold plasma treatment starts from an immature food science basis with many unknowns in terms of effects on safety and quality aspects. Examination of cold plasma as a means for decontamination of (packaging) surfaces will start with the development of small scale equipment to be used in the basic research sub-projects to evaluate the effects on material properties.



Advanced Heating Technologies

Ohmic heating, microwave and radio frequency technologies will be researched and demonstrated since the scientific base is sound. Full scale integration in processing lines is focused on, including hygienic design, eco-friendliness and efficiency.



Packaging

Within NovelQ, basic and applied issues in the area of material science will be integrated with concepts of bioactive, smart, biodegradable and eco-friendly packaging as well as coatings in order to fully understand and predict interactions between materials, products and processes.

Industry Advisory Platform

The Industry Advisory Platform (IAP) has been established to ensure the most effective transfer of demonstrated novel processing technologies to potential users and to ensure that NovelQ will focus on topics relevant for the stakeholders. The IAP will exploit and promote results and identify bottlenecks to be examined in the project and its spin-off projects. Best practices will be disseminated via established networks such as the European Federation for Food Science and Technology, Industry and non-profit organisations.

At the moment, the Industry Advisory Platform has more than 50 members. The members are from SME, multinationals, industrial network organisations and other international organisations that interested in novel processing. The companies in the cross-sector-platform are either active as food manufacturers, food machinery equipment suppliers or packaging firms. The Platform is continuously open to new interested parties, willing to actively participate in the IAP of NovelQ. For more information, please contact us at huug.devries@wur.nl.

Objectives

The overall objective of this trans-national, inter-sectorial Integrated Project is to formulate strategic solutions for technical and basic research hurdles in order to develop and successfully demonstrate novel processing schemes. The exploitation of potentially unique novel processing characteristics will improve quality, facilitate (incremental) innovation and further increase the added value of the EU food sector through:

- substantially extending shelf-life [without compromising safety] of, especially, fresh-like convenience foods of plant origin. This is quite often the limiting factor in maintaining the shelf-life of prepared whole meals. Solving this problem will help to maintain the value (quality and export) of regional recipes;
- responding to the demands of consumers for food with fresh characteristics similar to those of the raw material (taste, aroma, texture, healthy ingredients);
- responding to the demands of consumers for foods that contribute to individual health and wellbeing. Such foods will help to lower the levels of diet-related disease and reduce associated health and social costs across the European Union;
- enhancing eco-friendly innovative processing, as a direct consequence of reducing:
 - current wastage of fresh produce via extended shelf-life,
 - energy inputs, via low-temperature and low-energy processing,
 - usage of water and chemicals, via applications of new hygiene approaches, and
 - migration problems and packaging materials; via e.g. in-pack processing (thereby avoiding need for repackaging).

Project structure

