

Invitation to Stakeholder Forum



PROTEIN
2FOOD

PIONEERING
CROPS
FOR FUTURE
GENERATIONS

Hotel Golden Tulip Plaza Caserta

Caserta, Italy

30th May 2017

09:00-13:00



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 635727.

PROTEIN2FOOD 2nd stakeholder forum

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PROTEIN2FOOD is happy to invite you to our stakeholder forum which will be of mutual benefit for both you and us, leading to a potential long term partnership with one or more of the project participants. We are very keen to learn from you and receive your inputs, whereas you will gain all the knowledge accumulated in the project so far among world class scientists and institutions.

PROTEIN2FOOD is working for innovative, cost-effective and resource-efficient, locally produced, healthy plant proteins for human consumption. As a result PROTEIN2FOOD will develop high-quality food protein from multi-purpose crops (seed crops: Quinoa, amaranth, buckwheat and grain legumes: lupin, faba beans, chickpeas and lentils) through optimized, sustainable production and processing methods. The project consists of a diverse consortium with 19 partner institutions from 13 countries comprising breeders, farmers, food ingredient producers, and product manufacturers. The project runs from 2015 to 2020 and is funded by the European Union's Horizon 2020 research and innovation programme.

The programme for the stakeholder forum will be a morning consisting of presentations on the progress of PROTEIN2FOOD and from each stakeholder, followed by a workshops on plant protein products and requirements/barriers on the vegetable market. There will also be the opportunity to meet the researchers and innovative partners and discuss your engagement in the project. The programme concludes with lunch.

Participation in the meeting is free of charge - accommodation and travel, however, are not covered. As participating stakeholder you should prepare an very short introduction of yourself and company, and your interest in PROTEIN2FOOD. More information will follow after registration.

PLEASE REGISTER by sending an email with the following details to maria.riccardi@isafom.cnr.it

- Name, title and contact information
- Company name, location and type
- Travel times (arrival and departure)
- Any special requirements

Deadline for registration is the 7 April 2017.

For more information about the project or the stakeholder forum please contact project manager Sabrina Ruzanski on sabber@plen.ku.dk



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www.protein2food.eu

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PROTEIN2FOOD will create innovative, high quality, protein-rich food crops, to sustain human health, the environment and biodiversity.

Challenge

The increased demand for meat to a growing world population, while considering environmental sustainability, sustainable land-use practices and food security is a global challenge.

Europe has a large consumption of animal-based proteins for food, i.e. meat and dairy products, while most plant proteins in the EU are used as feed and not for human consumption. The EU currently imports 70% of its plant proteins for feed, especially soybean, mainly from Brazil. Soybean production in Brazil is highly unsustainable.

The project will address the challenges by developing high-quality food protein from multi-purpose crops (high-quality protein crops: quinoa, amaranth, buckwheat and grain legumes: lupin, faba beans, chickpeas and lentils) through optimised, sustainable production and processing methods.

Aims and Objectives

- to develop innovative, cost-effective and resource-efficient food crops that are high in protein, with a positive impact on human health, the environment and biodiversity
- to significantly enhance the quality and quantity of proteins from selected high-quality protein crops (quinoa, amaranth and buckwheat) and grain legumes (lupin, faba bean, chickpea and lentil), by using a multi-disciplinary approach, involving genetics, agronomy, and food-processing engineering, as well as sensory, socio-economic and environmental assessment
- to gain a better understanding of:
 - genetic mechanisms that drive protein formation and accumulation in seeds
 - plant resilience against biotic and abiotic stresses (pests and environmental factors)
 - protein interactions with other food components and their sensory consequences in the final food products

Expected Outcomes

- enhance the EU production of protein crops for human nutrition by 25% as compared to the current situation (2015) through new effective breeding techniques and optimised crop management
- increase Europe's arable land destined to protein-crop production for human consumption by 10%
- accelerate the transition in consumption of animal-based protein to plant-based protein in Europe with clear impact on reducing the carbon and water footprint
- increase Europe's agro-biodiversity by introducing novel high-quality crops
- develop prototypes of new protein-rich foods with a viable market potential
- improve Europe's visibility in the area of food processing and technology through popular and scientific publications



WORK PROGRESS within the first 18 months of the project

Crop Production

During the first 18 months of the project, we have carried out two growing seasons of field trials under Danish, Dutch, Italian and Romanian environmental conditions for screening of the performance of selected crops. These trials have been supported by greenhouse experiments to evaluate the effect of abiotic stresses. Analyses of protein level and protein quality have been undertaken together with specific molecular and transcriptome analysis and characterization of storage deposition (protein, starch, fat). The use of transcriptome sequencing data is currently being tested. Until August 2016, the yield performance of more than 150 genotypes has been evaluated. The field trials have resulted in useful evaluations of the effect of different agronomic practices (date, depth and density of sowing, fertilization). Abiotic stresses on selected protein crops gave preliminary indications on possible agronomic protocols for specific climatic conditions. For the screening of qualitative traits, a methodology based on quantification of 3D internal morphology of the seeds by X-ray micro-tomography was set up, as well as 3D image analysis of appearance, location and type of seed structure.

Protein extraction and fractionation

During the first period of the project, we have analysed the chemical composition of our selected crops and determined the best suited milling and dry fractionation technology for processing our raw materials. We have scaled-up to pilot plant scale which enables us to produce bigger amounts of flours. We have carried out sensory evaluations of the new protein-rich flours and tested their functional properties and the microbial loads. In addition, several process variants to provide native protein-rich fractions from lupin, quinoa, faba bean and lentil by mild aqueous processing have been investigated in lab scale. After process scale-up and full analytical characterisation of the novel protein fractions, we can use these results as ingredient toolbox for the development of innovative protein rich food prototypes.

Food processing

A comprehensive evaluation of plant-protein products currently at the market have been performed allowing the selection for 25 market leader products to be characterised. At the same time, a systematic evaluation of the functional characteristics of hydrocolloids and plant protein fractions in model system allowed to clarify their role and interaction with other food constituents (proteins and starch) at multidimensional (macro and ultrastructure) levels. These results are going to set the baseline for the prototype product development. A thorough understanding is an essential fundament for building revolutionary and environmentally sustainable protein-rich food and beverage products. In this first period we have on this basis selected the criteria for our prototype products and started exploring ingredients and recipes.



Market Analysis

PROTEIN2FOOD has during the first 18 months developed a database for European, Latin American and African countries, containing socio-economic and agronomic variables for the period 1961-2013. From this database we have identified trends and patterns in production and consumption of crop and animal protein products at global, continental and national (for EU- countries) scales, and contextualised these trends within policy and socio-economic landscapes. We have coordinated with the small-medium size enterprises of PROTEIN2FOOD to identify practical examples of the uses of plant protein products through the development of questionnaires. Consideration of future prospects for protein product production and consumption is an essential part of the project. Consideration of the future has been included within the market analysis. Further, a literature review of consumer behaviour and acceptance of meat substitutes has been made, and preliminary consumer profiles identified.

Sustainability Assessment

As part of the project, we will carry out a sustainability assessment of the food prototypes developed. This shall provide a better understanding of the environmental and socio-economic advantages and disadvantages of novel protein-rich food as well as the potential contribution of novel protein food to improved sustainability on EU and global scales. To make such an assessment large amounts of data need to be retrieved which have characterized the majority of the work during the first period. We have developed questionnaires to collect process data from WP1, WP2 and WP3 partners on agriculture, extraction, and processing of proteins and food prototype production. We have furthermore gathered LCI data from literature on ingredients and composition of already available plant-based protein foods on the market, and compiled FAO Food Balance data and FAO Food Production data into a consistent material flow model connecting EU food intake with EU food supply from farm to fork.

Dissemination, communication & social innovation

To gain increased visibility, credibility, and ultimately increased awareness of the importance to produce and consume more plant-based proteins, the project has developed a communication and dissemination plan. This entails a recognizable project identity (logo and templates for dissemination), communication products (bookmarks, roll-up poster, leaflets), a website and a targeted media strategy. Beside press-releases, the project has been involved in a number of newsletters, articles and communication activities. Engaging in social media as well as producing online materials such as the E-newsletter, are complementing the abovementioned communication strategy, project identity and website. A dedicated Twitter account (@SciFoodHealth) and hashtag (#P2FOOD) have been set up to enhance exposure.

Engaging with stakeholders is beneficial, on the one hand to make sure to capitalise on knowledge not necessarily represented in the research consortium, and on the other hand as a relevant channel for dissemination. Furthermore, involving well-known and credible stakeholders, such as FAO, again contributes to raising awareness and interest in the project while giving weight to it at the same time. A concrete case in point, with the aim to strengthen the involvement of the stakeholders in the implementation of the project activities, is the engagement with Romanian local farmers and SMEs.

