EUROPEAN COMMISSION / European Research Area

EU-FRESHBAKE

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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.

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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:

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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)