Food for thought: delivering the promise of food processing

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Humans have transformed raw ingredients into food since prehistoric times. But scientists are still looking for new ways to make food taste better and survive longer. Presenting their findings at a recent European Science Foundation and European Cooperation in the field of Scientific and Technical Research conference, scientists show how new food technologies are changing European diets.

The industrial revolution brought the advent of modern food processing technology. Whether you credit the Frenchman Nicholas Appert in 1809, or British born Peter Durand in 1810, the invention of the tin can has revolutionised the way people eat. The motivation behind its invention was simple – make food last long. Two hundred years on, food scientists are still trying to improve the shelf life of food.

For example, by introducing mixtures of oxygen, nitrogen and carbon dioxide into packaging, some fresh vegetables have had their life extended two- or three-fold. A similar approach is used in the packaging of meat, where gas is pumped into packaging, reducing oxygenation of the meats pigments, extending its shelf life.

But today's food scientists have to consider more than just the use-by-date. "Europeans want food that is cheap, convenient, high quality, safe and more and more produced in a eco-friendly way," explains Professor Brian McKenna, a food scientist at University College Dublin in Ireland. In addition, McKenna thinks that food plays a variety of roles in European society nowadays. "Food is important to peoples health as it is

increasingly being linked to diseases such as obesity, coronary heart disease and diabetes," he says. Furthermore, Europeans are now more aware of the cultural role of food in every day life. So food scientists must design technology that helps people get what they want from their food.

While increased interest over food can deliver more choice for consumers, it has also led to some misinformed debates. And Europeans have resisted many potentially useful technologies over unsubstantiated fears that they are not safe. "Nowadays, the public are much more sceptical, particularly when it come to food," says McKenna. McKenna cites the example of using irradiation to kill pests and increase the shelf-life of mushrooms. But this process is confined to only a few countries within Europe, such as the Netherlands, despite a considerable amount of evidence that it is safe for humans.

McKenna thinks that food scientists must consider the public's perception of new technologies or risk the rejection of these technologies. One example is nanotechnology—engineering at a very small scale. Nanotechnology is being used in medicine to deliver drugs to specific targets in the body. A similar approach could be used in food to deliver vitamins. However, there are currently no foods using nano-particles in this way in Europe. The use of nanotechnology in food has been slow because of public concern that nano-ingredients could reach parts of the body where they were never intended.

McKenna hopes that by understanding the socioeconomic, political, and cultural influences on what Europeans eat, food scientists can better advise policy makers about how food should be processed and packaged, and how it is sold and eventually eaten.

The conference, on November 5-6, was attended by 75 scientists and policy makers from 22 countries and was one of the series of research

conferences organised by the ESF-COST Forward Look initiative. Forward Look, a flagship instrument of the ESF, allows scientists to meet people from the world of policy and help set priorities for future research.